DENVER DTV-1401MKII

MODEL

SERVICE MANUAL

SAFETY PRECAUTIONS

IMPOTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics.These parts are identified by ⚠ in the Schematic Diagram and Replacement parts List.
It is essential that these special safety parts'should be replaced with the same components as recommended in this manual to prevent X-RADIATION,Shock,Fire,or other Hazards.
Do not modify the original design without permission of manufacturer.

General Guidance

An lsolation Transformer should always be used during the servicing of a receiver whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks.

It will also protect the receiver and it's components from being damaged by accidental shorts of the circuitary that may be inadvertently introduced during the service operation.
If any fuse (or Fusible Resistor) in this TV receiver is blown, replace it with the specified.
When replacing a high wattage resistor (Oxide Metal Film Resistor,over 1w),keep the resistor 10mm away from PCB. Keep wires away from high voltage or high temperature parts.
Due to high vacuum and large surface area of picture tube, extreme care should be used in handling the picture Tube. Do not lift the picture tube by it's Neck.

x-RAY Radiation

Warning:

The source of X-RAY RASIATION in this TV receiver is the High Voltage section and the picture Tube.
For continude S-RAY RADIATIONprotection , the replacement tube must be the same type tube as specified in the Replacement parts List

To determine the presence of high voltage,use an accurate high impedance HV meter.
Adjust brightness, color,contrast controls to minimum.
Measure the high voltage.
The meter reading should indicate 23.5±1.5KV:14-19 inch, 26 ±1.5kv:19-21inch,If the meter indication is out of tolerance,immediate serviceand correction is required to prevent the possibility of premature component failure.

Before returning the receiver to the customer always perform an AC leakag current check on the exposed metallic parts of the cabinet,such as antennas, terminals,etc;to be sure the set is safe to operate without damage of electrical shock.

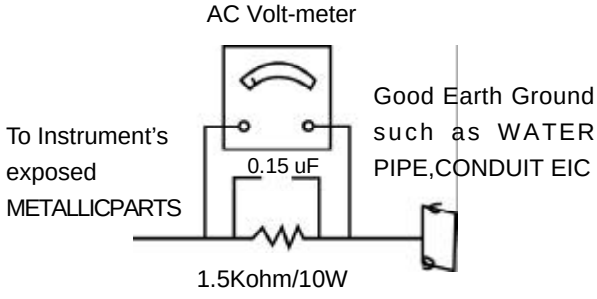
Leakage current cold check (Antenna cold check)

with the instrument AC plug renoved fron AC source, connect an electical junper across the two AC plug prongs. Place the AC switch in the on position, connect one lead of ohm-meter to the Ac plug prongs tied together and touch other ohm-meter lead in tum to each exposed metallic parts such as antenna terminals,phone jacks,etc.
If the exposed metallic part has a return path to the chassis, the measured resistance should be beween1MΩ and 5. 2MΩ When the exposed metal has no return path to the chassis the reading must be infinite,An other abnormality exists that must be corrected before the receiver is returned to the customer.

Leakage Current Hot Check(See below Figure)

plug the AC cord DIRECTLY into the AC outlet.
Do notuse a line lsolation Transformer during this check.
Connect 1.5k/10watt resistor in parallel with a 0.15uF capacitor between a known good earth ground (Water pipe, Conduit,etc.)and the exposed metallic parts.
Measure the AC voltage across the resistor using AC voltemeter with 1000 ohms/volt or more sensitivity.
Reverse plug the AC cord into the AC outlet and repeat AC voltage measurements for each exposed metallic part.Any voltage measured must not exceed 0.75 volt RMS which is corresponds to 0.5mA.
In case any measurement is out of the limits specified, there is possibility of shock hazard and the set must be checked and repaired before it is retumed to the customer.

Leakage Current-Hot Check circuit



SERVICING PRECAUTIONS

CAUTION:Before servicing receivers covered by this service manual its supplements and addenda,read and follow the SAFETY PRECAUTIONS on page 3 of this publication.
NOTE:lf unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions on page 3 of this publication, always follow the safety precautions. Remember:Safety First.

General Servicing precautions

1.Always unplg the receiver AC power cord from the AC power source before:

a.Removing or reinstalling any component,circuit board module or any other receiver assembly.

b.Disconnecting or reconnecting any receiver electrical plug or other electrical connection.

c.Connecting a test substitute in parallel with an electro lytic capacitor in the receiver.

CAUTION: A wrong part substitution or incorrect polarigy installation of electroiytic capacitors may result in an expiosison hazard.

d. Discharging the picture tube anode.

2. Test high voltage only by measuring it with an appropri ate high voltage meter or other voltage measuring de vice (DVM,FETVOM,etc)equipped with a suitable high voltage probe.

Do not test high voltage by “drawing an arc”.

3. Discharge the picture tube anode only by (a)first con necting one end of an insulated clip lead to the degauss ing or kine aquadag grounding system shield at the point where the picture tube socket ground lead is connected, and then (b)otuch the other end of the insulated dip lead to the picture tube anode button, using an insulating handie to avoid personal contact with high voltage.

4. Do not spray chemicals on or near this receiver or any of its assemblies.

5. Unless specified otherwise in this service manual,clean electrical contacts only by applying the following mixture to the contacts with a pipe cleaner,cotton-topped stick or comparable nonabrasive applicator:10%(by volume) Acetone and 90%(by volume)isopropyl alcohol(90%-90% strength)CAUTION:This is a flammable mixture.

Uniess specified otherwise in this service manual,lubri cation of contacts in not require

6. Do not defeat any plug/socket B+voltage interlocks with which receivers covered by this service manual might be equipped.

7.Do not apply AC power to this instrument and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.

8.Always connect the test receiver ground lead to the re ceiver chassis ground before connecting the test receiver positive lead.

Always remove the test receiver ground lead last.

9.Use with this receiver only the test fixtures specified in this service manusl.

CAITION:Do not connect the test fixture ground strap to any heatsink in this receiver.

Electrostatically Sensitive(ES)Devices

some semiconductor(solid state)devices can be damaged easily called Electrostatically Sensitive(ES)Devices.Examples of typical ES devices are integrated circuits and some field effect traansistors and semicounductor “chip”components.The following techniques should be used to help reduce the incidence of component damage caused by static by static electricity.

1.Immediately before handing any semiconductor component or semiconducotr-equipped assembly.drain off any electostatic charge on your body by touching a known earth ground.Alematively.

Obtain and wear a commercially available discharging wrisl strap device.which should be removed to prevent potential shock reasons prior to applying power to the unit under test.

2.After removing an electrical assembly epuipped with ESdevice.place the assembly on a conductive surtace such as aluminum foil.to prevent electrostatic charge buildup or exposure of the assembly.

3.Use only a grounded-tip soldering iron to solder or unsolder ES devices.

4.Use only an anti-static type solder removal device. Some solder removal devices not classified as “anti-static”can generate electrecal charges sufficent to demage ES devices.

5.Do not use freon-propelled chemicals.These can generate electrical charges srffient to damage ES devices.

6.Do not remove a repalcement ES device from its protective package until immediately before you are ready to install it.(Most replacement ES devices are package with leads electricall shorted together by conductive foam, aluminumfoil or comparable conductive material).

7.Immediately befor removing the protective material from the ieads of a replacement ES device touch the protective material to the chassis or circuit assembly into which the device will be installed.

CAUTION:Be sure no power is applied to the chassis or circuit and observe all other safety precautions.

8.Minmize bodily motions when handling unpackaged replacement ES devices.(Otherwise harmless motion such as the bruching together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

General Soldering Guidelines

1.Use a grounded-tip.low-wattage soldering iron and appropriate tip size and shape that will maintan tip temperture withen the range or 500k to 600k.

2.Use an appropriate gauge of RMA resin-core solder composed of 60parts tin/40parts lead.

3.Keep the soldering iron tip clean and well tinned.

4.Thorohly clean the surfaces to be soldered Use a mall wirebristle(0.5inch.or 1.25cm)brush with a metal handle. Do not use freon- propelled spray-on cleaners.

5.Use the following unsoldering technique

a.Allow the soldering iron tip to reach normal temperature (500k to 600k)

b.Heat the component lead until tne solder melts.

c.Quickly draw the melted solder with an anti-statlc,suc tion-

type solder removal device or with solder braid.
CAUTION:Work quickly to aviod overheating the circuiboard printed foill.
6.Use the following soldering technique.
a.Allow the soldering iron tip to reach a normal temperature (500k to 600k)
b.First,hold the soldering iron tip and solder the strand. Against the component lead the solder melts.
C.Quickly move the soldering iron tip to the junction of the compontent lead and the printed circuit foil and hold it there oniy until the solder flows onto and around both the component lead and the foil.
CAUTION:work quickly to avoid overheating the circuit board printed foil.
d.Closely inspect the solder area and remove any excess or splashed solder with a small wire-bristle brush.

IC Remove/Replacement

Some chassis circuit boards have slotted holes (oblong) through wheic the IC leads are inserted'and then bent ftat against the circuit foil. When holes are the slotted type the following technique should be used to remove and replace the IC. When working with boards using the familiar round hole use the standard technique as outlined in parapraphs 5 and 6 above.

Removal

1. Desolder and straighten each IC lead in one operation by gently prying up on the tead with soldering iron tip as the solder melts.
2.Draw away the melted solder with an anti-static suction-type solder removal device (or with solder braid) before removing the IC.

Replacement

1.Carefully insert the replacement IC in the circuit board
2.Carefully bend each IC lead against the circuit foil pad and solder it.
3.Clean the soldered areas with a small wire-bristle brudh. (It is not necessary to reapply acrylic coating to the areas).

"Small-Signal" Discrete Transistor
Removal/Replacement

1.Remove the defective transistor by clipping its leads as close as possible to the component body.
2.Bend into a "u" shape the end of each of three leads renaining on the circuit board.
3.Bend into a "u" shape the replacement transistor leads.
4.Connect the replacement transistor leads to the corre sponding leads extending from the circuit board and crimp the "u" with long nose pliers to insure metal to metal to metal contacttehn solder each connection.

Power Output, Transistor Device
Removal/Replacement

1.Heat and remove al solder from around the transistor leads.
2.Remove the heatsink mounting screw (if so equipped).
3.Carefully remove the transistor from the heat sink of the circuit board.
4.Insert new transistor in the circuit board.
5.Solder each transistor lead and clip off excess lead.
6.Replace heatsink.

Diode Removal/Replacement

1.remove defective diode by clipping its leads as close as possible to diode body.
2.Bend the two remaining leads perpendiculay to the cir cuit board.
3.Observing diode polarity wrap each lead of the new diodearound the corresponding lead on the circuit board.
4.Secruely crimp each connection and solder it.
5.Inspect (on the circuit board copper side)the solder joints of the two "original" leads. If they are not shiny reheat them and if necessary apply additional solder.

Fuse and Conventional Resistor
Removal/Replacement

1.Clip each fuse or resistor lead at top of the circuit board hollow stake.
2.Securely crimp the leads of replacement component around notch at stak top.
3.Solder the commections.

CAUTION:Maintain original spacing between the replaced component and adjacent component and the circuit board to prevent excessive component temperaures.

Circuit Board Foil REPAIR

Excessive heat applied to the copper foil of any printed circuit board will weaken the adhesive that bonds the foil to the circuit board causing the foil to separte fron or "lift-off" the board. The following guidelines and procedures should be followed whenever this condition is encountered.

At IC Connections

To repair a defective copper pattem at IC connections use the following procedure to install a jumper wire on the copper pattem side lf the circuit board.9 (use this technique ony on IC connections)

1.Carefully remove the damaged copper pattem with a sharp knife.(Remove only as much copper as absolutely necessary).
2.Carefully scratch away the solder resist and acrylic coating(if used) from the end of the remaining copper patten.
3. Bend a small "U" in one end of a small gauge jumper wire and carefully crimp it around the IC pin.Solder the IC connection.
4.Route the jumper wire along the path of the out-away copper patten and let it overlap the previously scraped end of the good copper pattem.Solder the overlapped area and dip off any excess jumper wire.

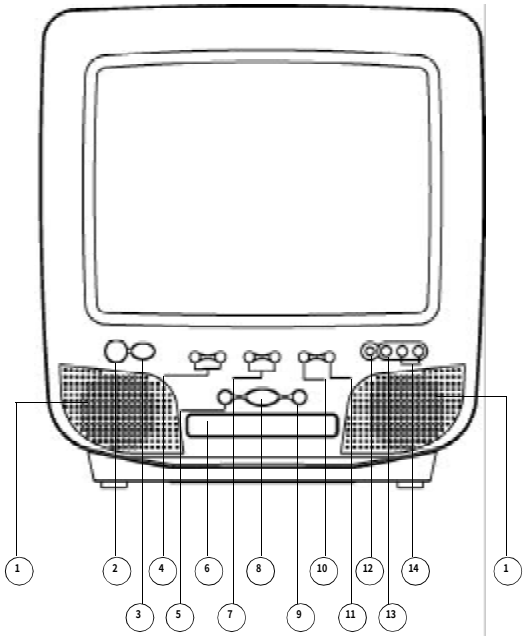
At Other Connections

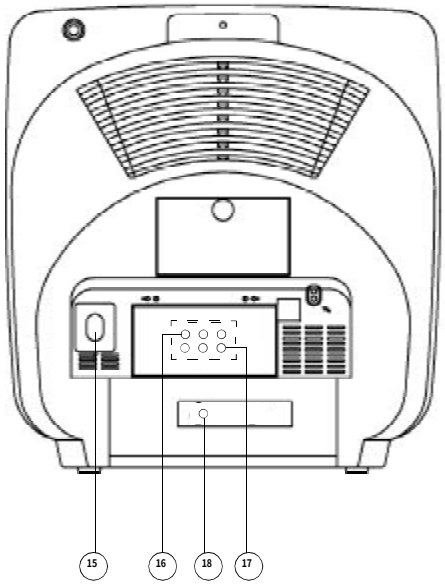
Use the following technique to repir the defective copper pattem at connections other than IC pins.This technique involoves the installation of a jumper wire on the component side of the circuit board.

1.Remove the defective copper pattem with a sharp knife. Remove at least 1/4 inch of copper,to ensure that a haz ardous condition will not exist if the jumper wire opens.
2.Trace along the copper pattem from both sides of the pattem break and locate the nearest component that is directly connected to the affected copper pattem.
3. Connect insulated 20-gauge jumper wire from the lead of nearest the nearest component on one side of the pattem break to the lead of the nearest component.on the other side,Carefully crimp and solder the connections.

CAUTION: Be sure the insulated jumper wire is dressed so the it does ot touch componets or sharp edges.

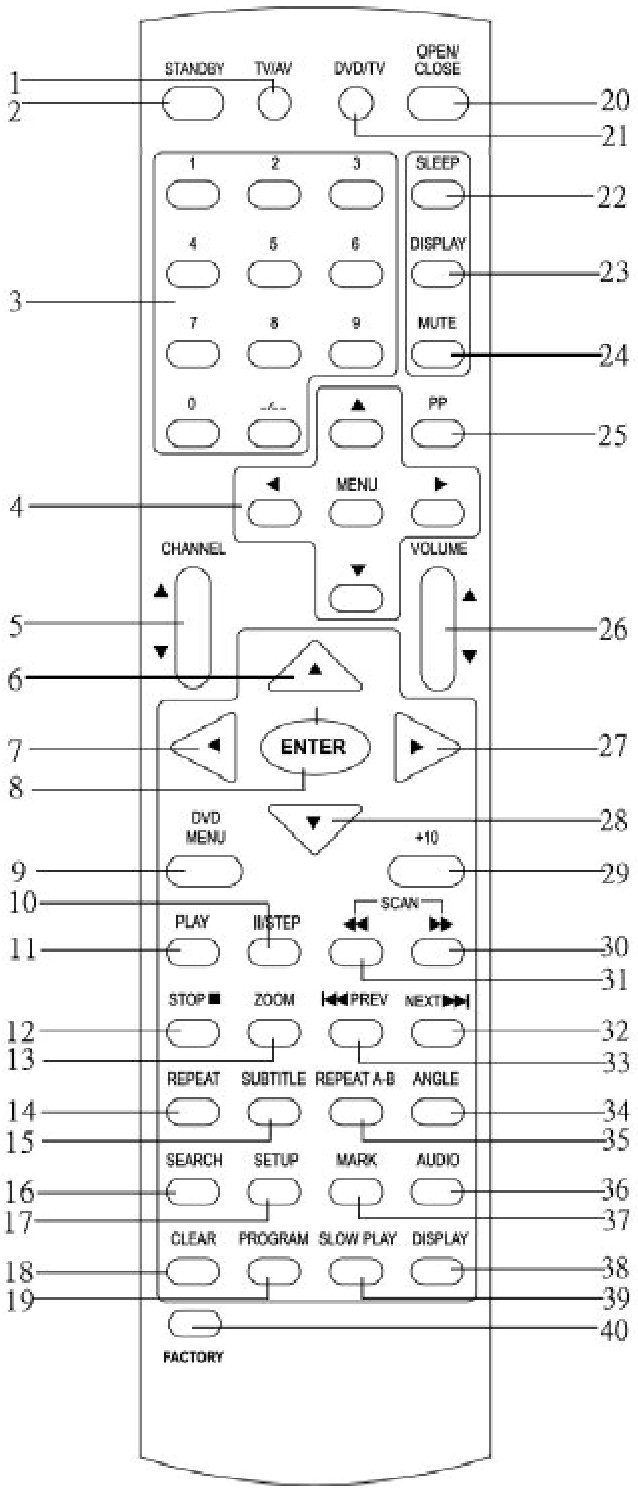
LOCATION OF CONTROLS





1. Speaker
2. Power Button
3. Remote Sensor
4. Channel Buttons
5. Open/Close Button
6. DVD Loader
7. Volume Buttons
8. DVD Play Button
9. DVD Stop Button
10. TV Menu Button
11. TV/AV/DVD Button
12. Earphone Jack
13. Video (1) Input
14. Audio(1) Input (R+L)
15. 75 Ohm Antenna Socket
16. Video/Audio(2) Input
17. Video/Audio Output
18. Audio digital Out Socket (For DVD only)

LOCATION OF CONTROLS



1. TV/AV Button
2. Standby Button
3. Numberic Buttons
4. TV Menu/Navigation Arrows Buttons
5. Channel Button
6. DVD Navigation Up Button
7. DVD Navigation Left Button
8. DVD Enter Button
9. DVD Menu Button
10. Pause/Step Button
11. Play Button
12. Stop Button
13. Zoom Button
14. Repeat Button
15. Subtitle Button
16. Search Button
17. Setup Button
18. Clear Button
19. Program Button
20. Open/Close Buttons
21. DVD/TV Buttons
22. Sleep Button
23. TV Display Button
24. Mute Button
25. PP Button
26. Volume Up/Down Buttons
27. DVD Navigation Right Button
28. DVD Navigation Down Button
29. DVD +10 Button
30. Fast forward Button
31. Fast backward Button
32. Next Button
33. Previous Button
34. Angle Button
35. Repeat A-B Button
36. Audio Button
37. Mark Button
38. DVD Display Button
39. Slow Play Button
40. Factory Button

OPERATING THE TV

Using the remote control

- Any object between the remote control and the main unit will block the path of the beam when it is being used.
- Dark walls,direct sunshine or very bright light will reduce the remote control sensitivety.
- Hold the remote control within an angle of about 30° from either side of the remote sensor.
- When the remote control is in front of the remote sensor,it will work within about 7 meters (23 feet) from the unit.
- Point the front of the remote control directly at front of the unit.
- Function keys do not work when pressing several keys at the same time.

SPECIFICATION

- Colour System PAL
- Power Requirement AC 220V 50Hz
- Power consumpion. 90W
- Stand-by consumpion 10 W
- **Tuning system:**
  VST System
  255 Programme memory
- **Antemma input impedance:**VHF/UHF 75 ohm,unbalanced
- **OSD(On Screen Display):** MENU Type
- **Voice coil impedance:** 8 ohm
- **Sound output:** mono 1.5 W FROM 14''; 2W FROM 21''
- **External In/Output**
  A udio-In:0.5 Vrms ± 3 db, over 10k ohm
  Audio-Out: 0.5Vrms ± 3 db,below 1k ohm
  Video-In/Out: 1Vp-p+3db,75 ohm
  R,G,B IN: 0.7 VP-P ± 3 db
- **Feature:** Auto programme
  PSM (Picture Status Memory)
  8 LANGUAGE: ENGLISH.SPANISH.FRENCH.GERMAN.ITALIAN.DUTCH.RUSSIAN. PORTUGUESE.

ALIGNMENT INSTRUCTION

1.PLEASE READ BEFORE ATTEMPTING SERVICE

1. Do not connect any antenna plug directly to the tuner socket and do not connect any equiprnents directly to the TV chassis,otherwise it may be burnt out the TV or equipment,execept an isolation transformer is used for main power source or the TV sets.
2.Never disconnect any leads while reveiver is in operation.
3.Disconnect all power before attempting any repairs.
4.Do not short any portion of the circuit while power is on.
5.For safety reasons,all parts replaced should be identical(for parts and pat numbers see parts list)
6.Before alignment the set must be pre-heated for 30 minutes or more and erase magnetism thoroughly from CRT front chassis frame by erase coil.

TEST EQUIPMENT

1.Colour Bar/Dot/Cross Hatch
2.Oscilloscope
3.Vacuum Tube Voltmeter
4. Volt Ohumeter
5.High Voltage Meter
6. Ampere Meter (0.5 Class,DC 3mA Max.)
7. Demagnetizing Coil
8. Closed Caption Encoder
9. High Pot Tester

1. B+ADJUSTMENT

1. Connet a digital voltmeter to B+ and Ground.
2. Set Brightness Contrest to minimum.
3. Adjust Screen Volume on FBT until the picture can just been seen.
4.Adjust VR901 to obtain a reading of 110±0.5V From 21",107V±0.5V From 14".

ALIGNMENT STEP

1.Press the SERVICE button of the remote control to enter into the SERVICE MODE.
Press the numberic button 0-6 to enter into the SER VCJ 0-6 MENU.

2.Press ▲▼ button to select relevant item.

3.Press ◄► button to change the DATA.

4.Press the MENU button of the remote ocntrol to guit the SERVICE MODE.

Remaks:

Press the picture PP button of the remote control to set the picture to "STANDARD".

||. VIF ALIGNMENT(IFFS)

1. Enter into the SEVICE MODE SER. select VIF FREQ.
2. Press the ◄► button to obtain a correct DATA.

|||. AGC ALIGNMENT (TOP)

1. Receive monoscope patten at CH 69 and the input signal is 62±3dB.
2. Connect a digital voltmeter between the TUNER AGC Terminal and ground.
3. Enter into the SEVICE MODE and select RF. AGC. ADJ.
4.Press ◄► button to adjust to the maximum value'00'.
5.And then adjust the value until the voltage drop down ≥ 0.4v.

Remark: a/. The drop down voltage should be more than and tends to 0.4v.
b/. No observable noise can be seen.

IV. **VERTICAL ALIGNMENT**

1. Receive monoscope patten.
2. Enter into the SERVICE MODE SER VCJ.0 and select the following items V.SHIFT.V.SIZE.V.SCORR. V.LIN

3 .Adjust the value of the above items to obtain a normal picture.

V. HORIZONTAL ALIGNMENT

1. Receive monoscope patten
2. Enter into the SERVICE MODE and select the SER VCJ.0 H.PHASE item.
3. Adjust the Value to obtain the picture at center ± 2mm.

VI. G2 VOLTAGE ALIGNMENT

1.Receive a grey scale pattern.

2.Enter the SERVICE MODE to select the TV.

3.Press the ▶ button then the TV will become Horigontal Line.

4.To adjust the screen VR to make the Horigontal Line just illuminate.

5.After a justment is completed,press the ◀ button then the TV Screen will become Normal.

VII. WHITE BALANCE ALIGNMENT

1. Degauss the picture by degaussing coil.

2. Receive a black and white pattern.

3. Enter into the SERVICE MODE select.DRIVE.R.DRIVE.B.CUTOFF.R.CUTOFF.G CUTOFF.B.

4.Adjust the value to obtain uniformly white picture 9300°k $\pm$3 JND

VIII.SUB-BRIGHTNESS ALIGNMENT(SBRI)

1.Receive a grey scale pattern.

2.Enter into the SERVICE MODE select SUB-BRI .

3.Adjust the value until the brighness bar can just be seen.

IX. FOCUS ALIGNMENT

1) Set the Brightness and Contrast to middle position.

2) Reveive a monoscope pattern.

3) Adjust focus control to obtain sharpest picture.

X. HIGH POT TESTING

1) Short the L-pole and N-pole of AC line cord.

2) Switch on the power switch of the TV set.

3) The High Pot Tester(-)connect to the L and N pole, (+) to the METAL PART of CABINET.

CONDITION / SAFETY STD.	TEST STANDARD	TEST STANDARD FOR PRODUCTION
VDE,SAA	3.0KV 10mA/1MIN	$\geq$ 3.5KV $\leq$ 10mA/ $\geq$ 10SEC
BS	4.0KV 10mA/1MIN	$\geq$ 4.0KV $\leq$ 10mA/ $\geq$ 10SEC
CHINASTANDARD	3.0KV 10mA/1MIN	$\geq$ 3.3KV $\leq$ 5 mA/ $\geq$ 6 SEC
UL	1.0KV 5mA/1MIN	$\geq$ 1.25KV $\leq$ 5mA/ $\geq$ 1 SEC

SERVICE MODE ALIGNMENT STEPS

1. Press the FACTORY button to enter to the service mode.
2. Press the --/- button to change the desired item page.
3. Press the Navigation Arrows button ▲/▼ to choose the desired item to be adjust.
4. Press the Navigation Arrows button ◀ / ▶ the adjust the volume.
5. Press the TV MENU button to exit the service mode

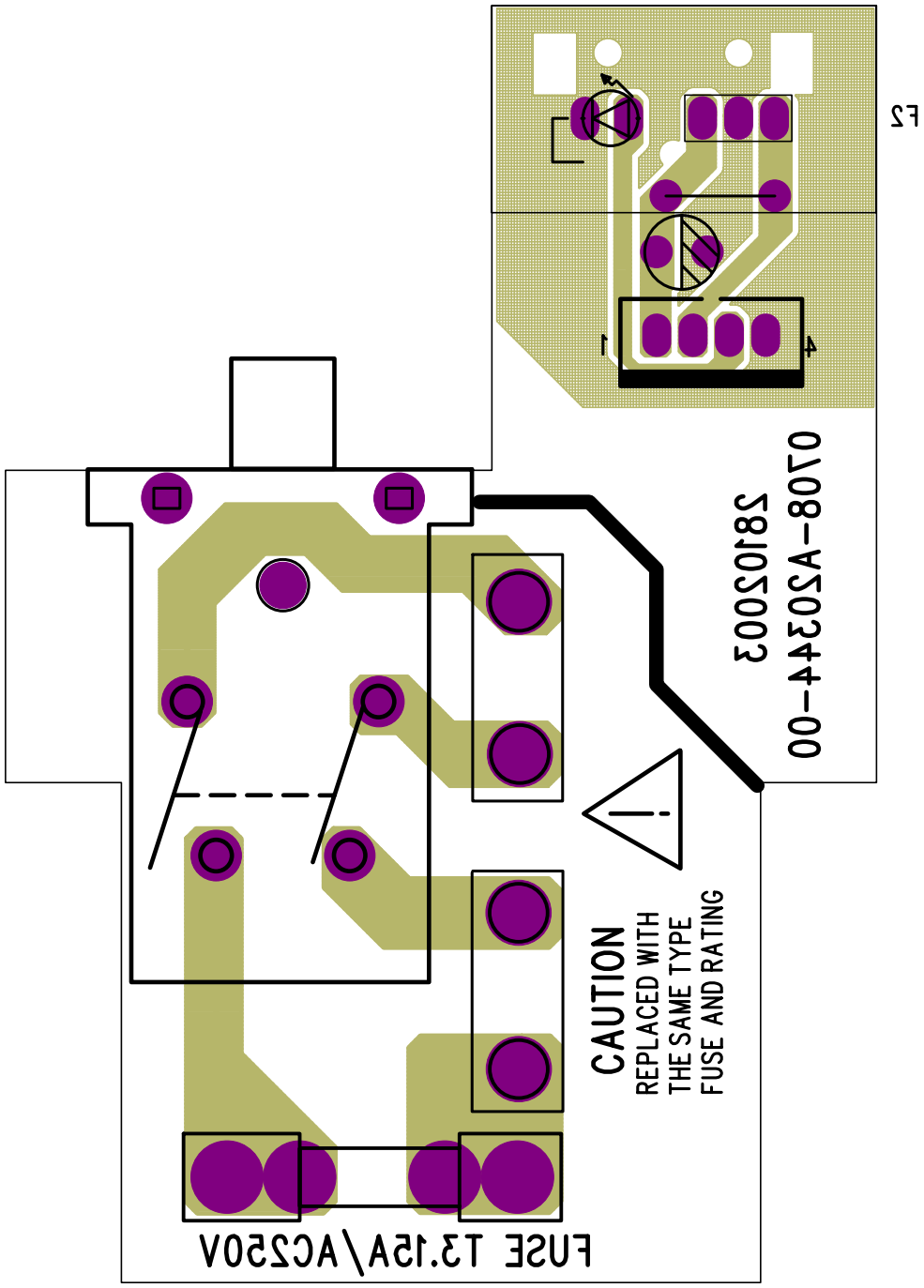
FACTORY SETTING TABLE

SER VCJ0 （item page）	Remarks	DESCRIPTION
H PHASE 0 ~ 31	★	Horizontal Phase Adjustment For Horizontal Picture Position Adjustment;
H VCO ADJ 0 ~ 7	★	Horizontal VCO Free Running Frequency Adjustment;
V SHIFT 0 ~ 7	★	Vertical Ramp Start Timing Adjustment For Vertical Picture Position Adjustment;
V SIZE 0 ~ 63	★	Vertical Ramp Amplitude Adjustment For Vertical Picture Size Adjustment;
V S CORRECTION 0 ~ 63	★	Vertical S Correction Adjustment;(For M61264 IC On ly)
V LINEARITY 0 ~ 63	★	Vertical Linearity Adjustment; (For M61264 IC Only)
Y DL TIME ADJ 0 ~ 3	◆	Y Signal Delay Time Adjustment;
Y DL FINE ADJ 0 / 1	◆	Y Signal Delay Time Fine Adjustment;
SIGNAL 0 ~ 15	◆	Adjustment Signal Selection;
DR 0 ~ 127	★	R OUT Amplitude Adjustment;
DB 0 ~ 127	★	B OUT Amplitude Adjustment;
CR 0 ~ 255	★	R OUT Pedestal Level Adjustment;
CG 0 ~ 255	★	G OUT Pedestal Level Adjustment;
CB 0 ~ 255	★	B OUT Pedestal Level Adjustment;
VT 0 / 1	★	Vertical Ramp Out Stop Selection;
SUB-BRI 0 ~ 100	◆	Subsidiary Bright Adjustment;
V SYNC DET1 0 / 1	№	V Sync Det 1/2 V Sync; Minimum time; Det 1 Det 2 0 0 11.5usec 0 1 10usec 1 0 20.5usec 1 1 16.5usec
V SYNC DET2 0 / 1	№	
BGP FBP OFF 0 / 1	№	BGP output system switching; Status ‘ 0 ’ = BGP is output regardless of FBP ‘ 1 ’ = BGP is output only inside of FBP
S SLICE DOWN 0 ~ 3	№	Sync separation slice level selection;
AUTO SLICE DOWN 0 / 1	№	Sync detector slice level switch during video period; Status ‘ 0 ’ = Slice level constant ‘ 1 ’ = Slice level down during video period only

TAKE OFF 0 / 1	№	Chroma BPF/Take off switch; Compensate SAW Filter effect “ 1 ” = ” Take off ” ; “ 0 ” = ” BPF ”
C ANGLE 95 0 / 1	№	Chroma relational angle of demodulationswitch; Status ‘ 0 ’= 103degree --Standard value;‘ 1 ’= 95degree;
EXT RGB C CLIP 0 / 1	№	Effective on “ On Screen Display ” only; Status ‘ 0 ’ = OSD level has low limit control ‘ 1 ’ = OSD level is dependent on contrast control
C CLIP LEVEL 0 / 1	№	C Clip Level Clipped contrast level; 0 = Low (32/128) ; 1 = High (48/128)
RF AGC ADJ 0 ~ 127	★	Tuner AGC Takeover Point Adjustment;
VIF VCO ADJ 0 ~ 63	★	VIF VCO Free-Running Frequency Adjustment;
VIF FREQ. 0 ~ 7		VIF VCO Frequency Selection;
VIF VIDEO OUT GAIN 0 ~ 7	№	VIF Video Out (Pin58) Amplitude Control;
STRAP FINE ADJ 0 ~ 7	№	Sound Frequency Adjustment;
STRAP FINE ADJ MSB 0 / 1	№	Sound Frequency Adjustment MSB bit;
S TRAP OFF 0 / 1	№	Sound trap frequency ON/OFF; Status '0'= Sound Trap ON ; ‘ 1 ’ = Sound Trap OFF
OM DET 0 / 1	№	Over-modulation detector ON/OFF; Status ‘ 0 ’ = Over-modulation detector OFF ‘ 1 ’ = Over-modulation detector ON
AFT OUT LOW / OK / HIGH		AFT OUT Display;
S TRAP Q UP 0 / 1	№	Sound trap Frequency; Status '0' = Normal; '1' = Up
WHITE BACK 0 / 1	★	White Back Mode ON / OFF Selection;0=OFF; 1= ON
ABCL 0 / 1	№	Auto Brightness And Contrast Limiter; 0=ACL (Auto Contrast Limiter) Operation; 1=ABCL (Auto Brightness And Contrast Limiter) Operation
ABCL GAIN 0 / 1	№	ABCL Gain Low Or High Switch; 0=Low; 1=High
HALF TONE SWITCH 0 / 1	№	Half Tone Function; 0=OFF(Normal Level); 1=Color And Luminance Level Are Half
ANALOG OSD 0 / 1	№	OSD input Analog/Digital switch; Status '0' = Digital '1'= Analog
OSD LEVEL 0 / 1	№	OSD output level switch; Status '0'= 70%; '1'= 90%;
Y SW LPF 0 / 1	№	Y SW OUT, pin 31, LPF ON/OFF; Status ‘ 0 ’ = Flat ; ‘ 1 ’ = LPF (fc = 700kHz) If Y SW OUT is used both AV-out and CCD-out, do not turn ON the Y SW LPF bit, because it occurs loss high frequency in AV-out. In that case, make a filter and insert as below.
VIDEO TONE GAIN SW 0 / 1	№	Video Tone Gain Switch; 0=Standard; 1=Sharp
C TRAP FINE ADJ 0 ~ 3	№	Chroma Trap Adjustment;
DOUBLE TRAP 0 / 1	№	Chroma Double Trap Selection;

BLK STRE. OFF 0 / 1	◆	Black Stretch Function ON / OFF; 0=ON; 1=OFF
BLK STRE. CHANG 0 / 15	◆	Charging time adjustment;
BLK STRE. DISCHA 0 / 15	◆	Discharging time adjustment;
BLK STRE. GAIN 0 / 1	◆	Black Stretch Gain Switch; 0=Normal; 1=Gain UP
GAMMA CONTROL 0 ~ 1	◆	Luminance Gamma Threshold Control; 0=Gamma OFF;1~3=Gamma ON : 3 Modes
SECAM B L ADJ R 0 ~ 31		
SECAM B L ADJ B 0 ~ 31		
SECAM B F ADJ R 0 / 1		
SECAM B F ADJ B 0 / 1		
SECAM KILLER 0 ~ 3		
SECAM Y DL		
SECAM BGP SHIFT		
SECAM OFF		
U DL FINE ADJ 0 ~ 3		
V DL FINE ADJ 0 ~ 3		
V AGC		
DVD OFF TIME 0 ~ 100	◆	DVD Power OFF Time Adjustment;
DVD TRI. TIME 0 ~ 250	◆	DVD Trigger Pulse Width Adjustment;
DVD TRI. DELAY TIME 0 ~ 30	◆	DVD Trigger Delay Time Adjustment;
CURTAIN SPEED	◆	Curtain Speed Adjustment;
CURTAIN POS	◆	Curtain Position Adjustment;
SAVER SPEED 0 ~ 10	◆	Screen Saver Speed Adjustment;
MENU STYLE 0 / 1	◆	Menu Style Setting; 0=Normal Menu; 1=Figure Menu
SOFTWARE VER.	№	Software Version;
INT AUDIO CON ON / OFF	◆	Internal Audio Control And Mute Function Selection; ON= Internal Audio Control And Internal Mute; OFF=PWM Volume Control; Hardware Mute;
AUTO2 SYSTEM SEL 0 / 1	◆	Color System AUTO2 Function Selection; AUTO2 = PAL – M & PAL – N & NTSC
DECODER CHOICE 0 / 1	◆	Decoder IC Selection; 0 = M61260 ; 1 = M61264
BALANCE SEL 0 / 1	◆	Balance Setting; ON=W/ Balance Control; OFF=W/O Balance Control;
VIDEO OUT ON / OFF	◆	VIF Detector Output Selection;
FACTORY KEY 0 / 1	◆	Factory Key Setting;1=Hot Key; 0= “ Menu + Stan dby ”;
MENU H POS 0 ~ 60	★	OSD Display Horizontal Position Adjustment;
MENU V POS 0 ~ 30	★	OSD Display Vertical Position Adjustment;
AV2 ON / OFF	◆	AV2 Input Function Selection;

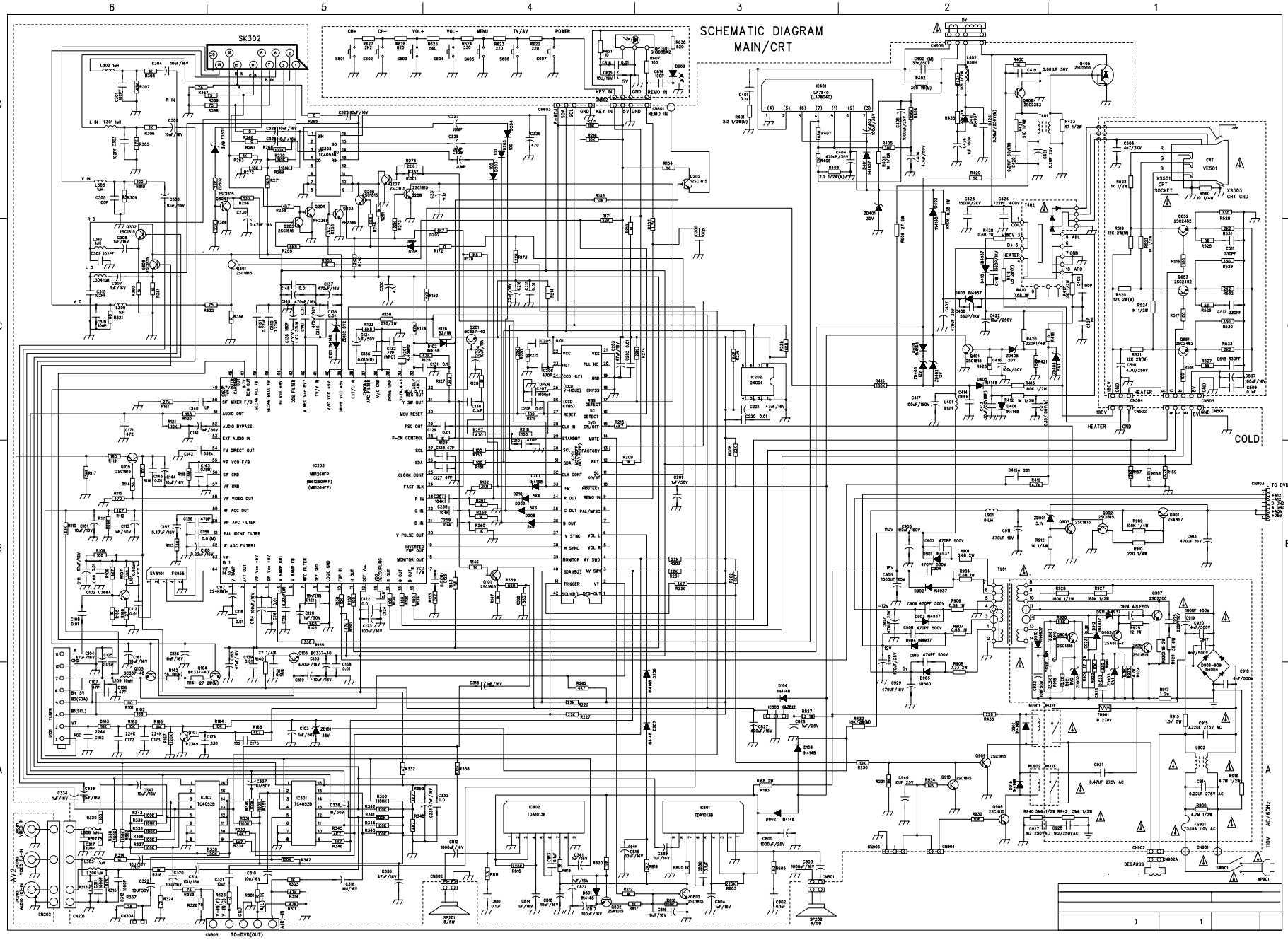
SVHS	ON / OFF	◆	SVHS (Y / C) Input Function Selection;
YUV	ON / OFF	◆	YUV Input Function Selection;
DVD	ON / OFF	◆	DVD Input Function Selection;
DK	ON / OFF	◆	Sound System DK Function Selection;
I	ON / OFF	◆	Sound System I Function Selection;
BG	ON / OFF	◆	Sound System BG Function Selection;
M	ON / OFF	◆	Sound System M Function Selection;
AUTO1	ON / OFF	◆	Color System AUTO1 Function Selection; AUTO1 = PAL & NTSC & 4.43NTSC & SECAM
PAL	ON / OFF	◆	Color System PAL Function Selection;
NTSC	ON / OFF	◆	Color System NTSC Function Selection;
NTSC4.43	ON / OFF	◆	Color System NTSC4.43 Function Selection;
SECAM	ON / OFF	◆	Color System SECAM Function Selection;
3.58PAL	ON / OFF	◆	Color System 3.58PAL Function Selection;
PAL – M	ON / OFF	◆	Color System PAL – M Function Selection;
PAL – N	ON / OFF	◆	Color System PAL-N Function Selection;
KILLER LEVEL	0 / 1	№	Color Killer Sensitivity Threshold Switch; Status ‘ 0 ’ = 43dB ‘ 1 ’ ≈ 45dB
POWER ON MODE	0 ~ 2	◆	Power ON Mode Selection; 0=Standby; 1=Power ON; 2=Status Of Power OFF;
□□□□□□□□□□	(0~9) symbol (A~Z)	◆	Edit Logo Setting;
LOGO	ON / OFF	◆	Logo Setting Switch;
COLOR	BLK/RED/ RE/YEL/BLU PUR/CYA/WHI	◆	Logo Color Selection;
Remarks:			
Symbol ★ :To be alignment by production Line.			
Symbol◆ : Not allow to adjust by production Line except production Engineer.			
Symbol № : Not allow to adjust by production Line.			



NOTE:

COPPER:2 Layer
SOLDER MASK:28 Layer
DRILL:24 Layer
COPPER SIDE:29 Layer
COMPONENT SIDE:26 Layer

STARLITE				
TITLE: SWITCH PCB BOARD.		DATE CODE:20052003	SAMPLE:	
0708-A20344-00	PRINT FILES SCALE: 1 : 1		TOOLING:	X
DRAFTSMAN: ZENGXIANGFA			MODIFY:	
CHECKED BY:ZENGXIANGFA				


SCHEMATIC DIAGRAM
MAIN/CRT
SK302
CH+
CH-
VOL+
VOL-
MENU
TV/AV
POWER
KEY IN
REMO IN
IC401
LA7840
(LA78040)
IC201
24C04
IC202
24C04
IC203
M61260FP
(M61250AFP)
(M61264FP)
IC301
TC4052B
IC302
TC4052B
IC801
TDA1013B
IC802
TDA1013B
CRT
VE501
XS501
CRT
SOCKET
XS503
CRT GND
HEATER
COLD
TO DVD
TO-DVD(OUT)
DEGAUSS
110V AC/60Hz
SP201
8/5W
SP202
8/5W
SP203
8/5W
CN202
CN203
CN804
CN805
CN806
CN902
CN903
CN904
CN905
CN906
CN907
CN908
CN909
CN910
CN911
CN912
CN913
CN914
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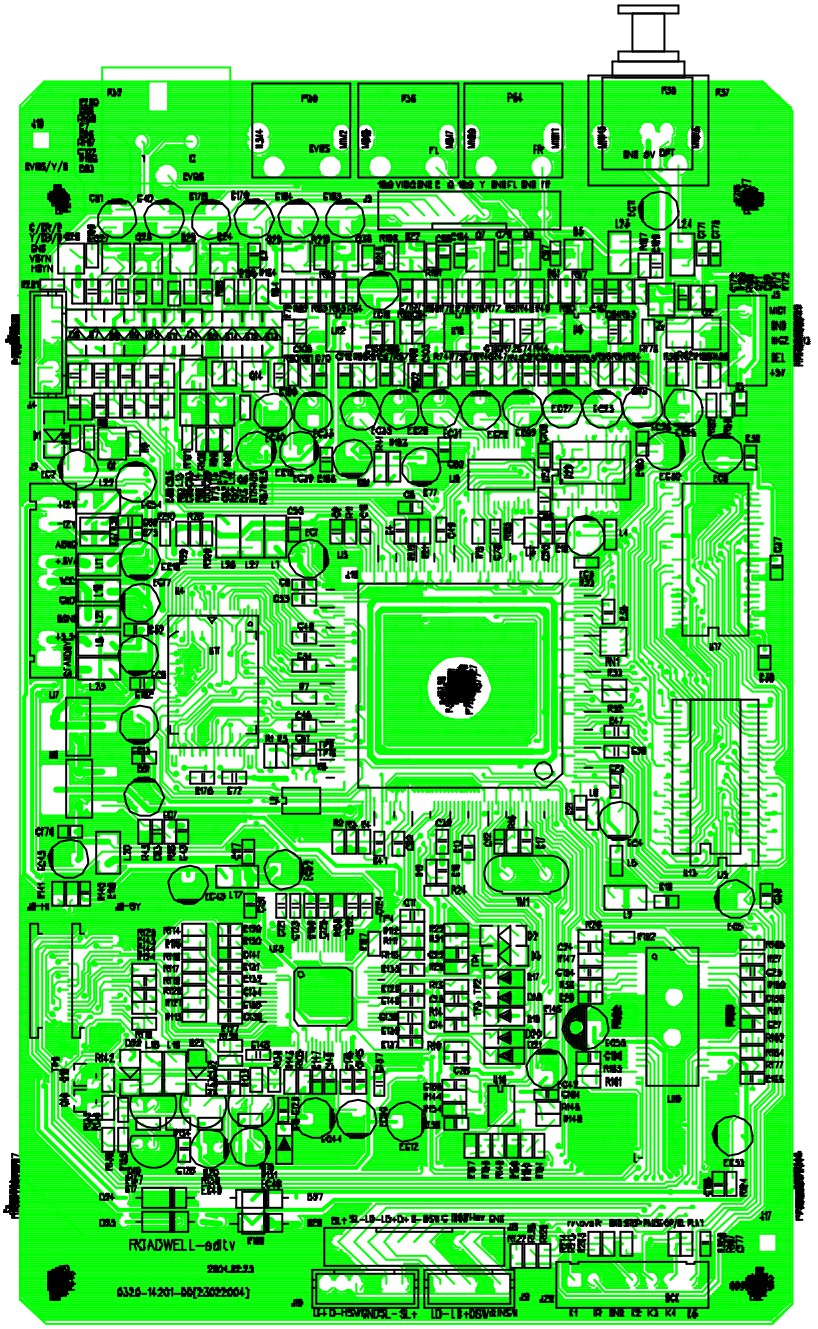
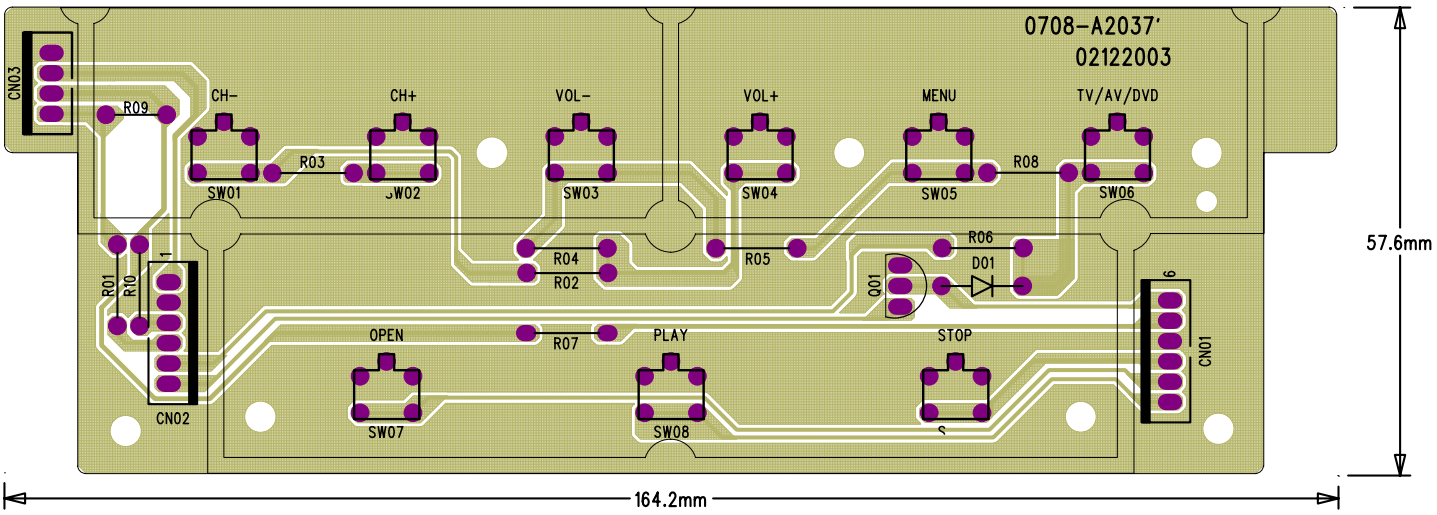
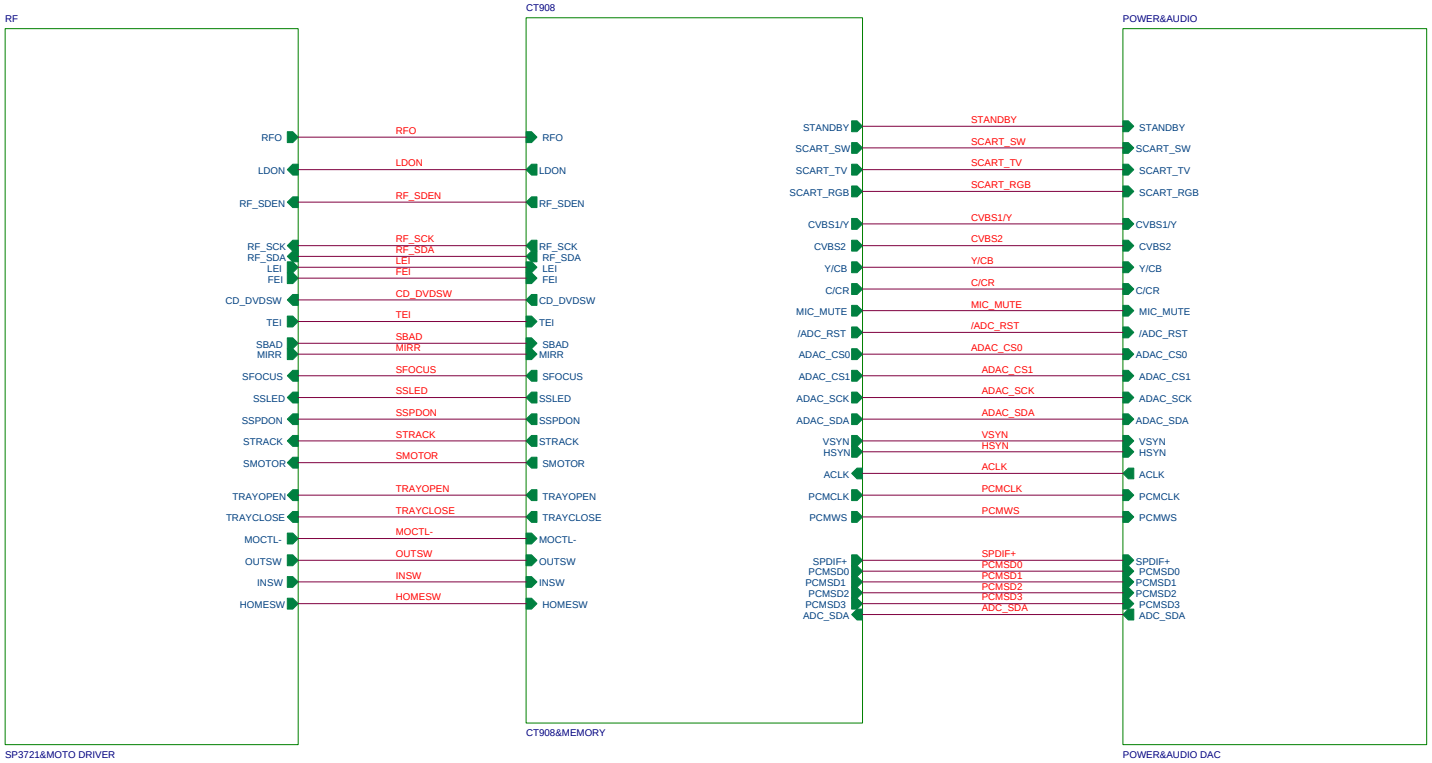
CN997
CN998
CN999
CN1000

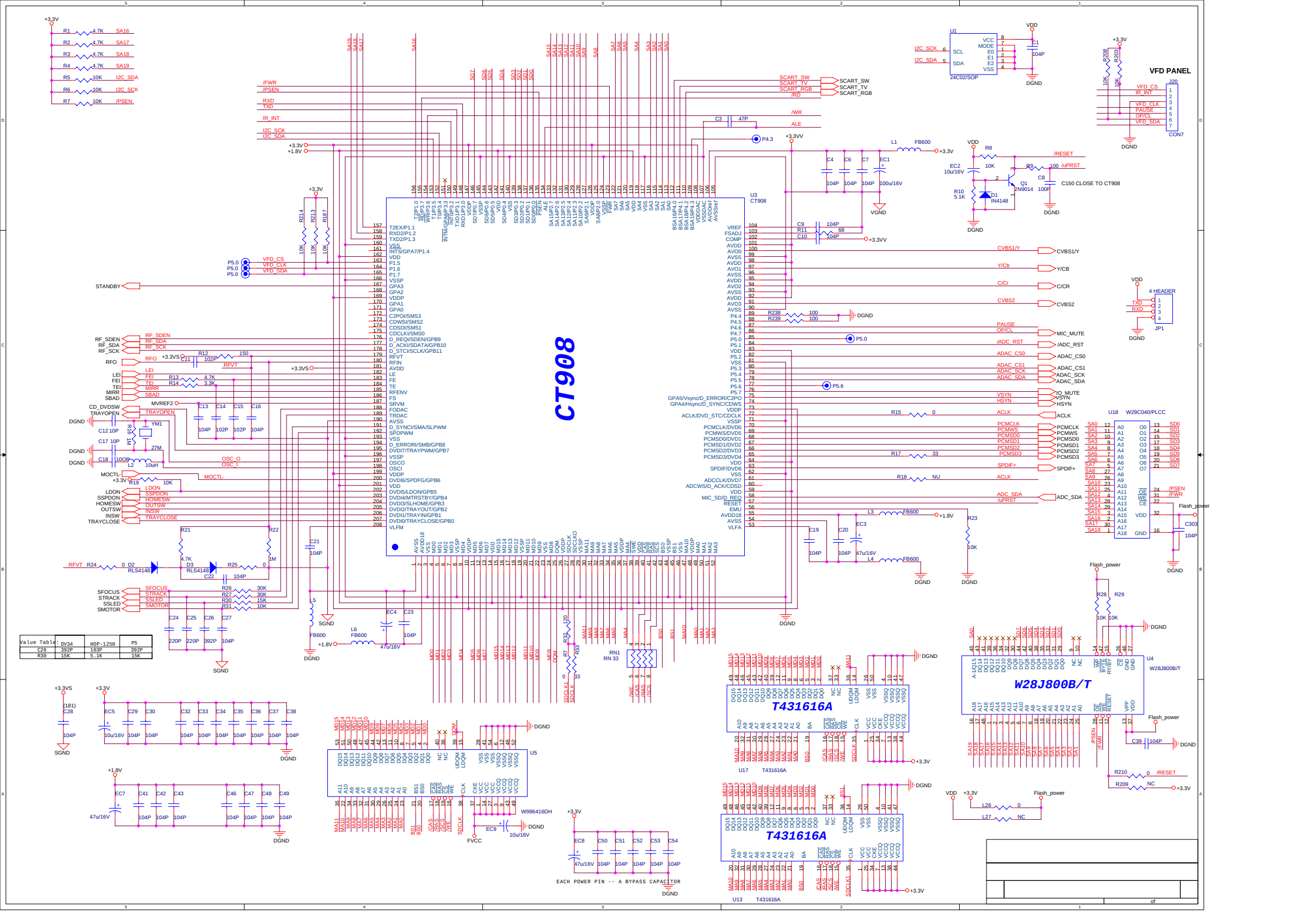

ROADWELL-adtv

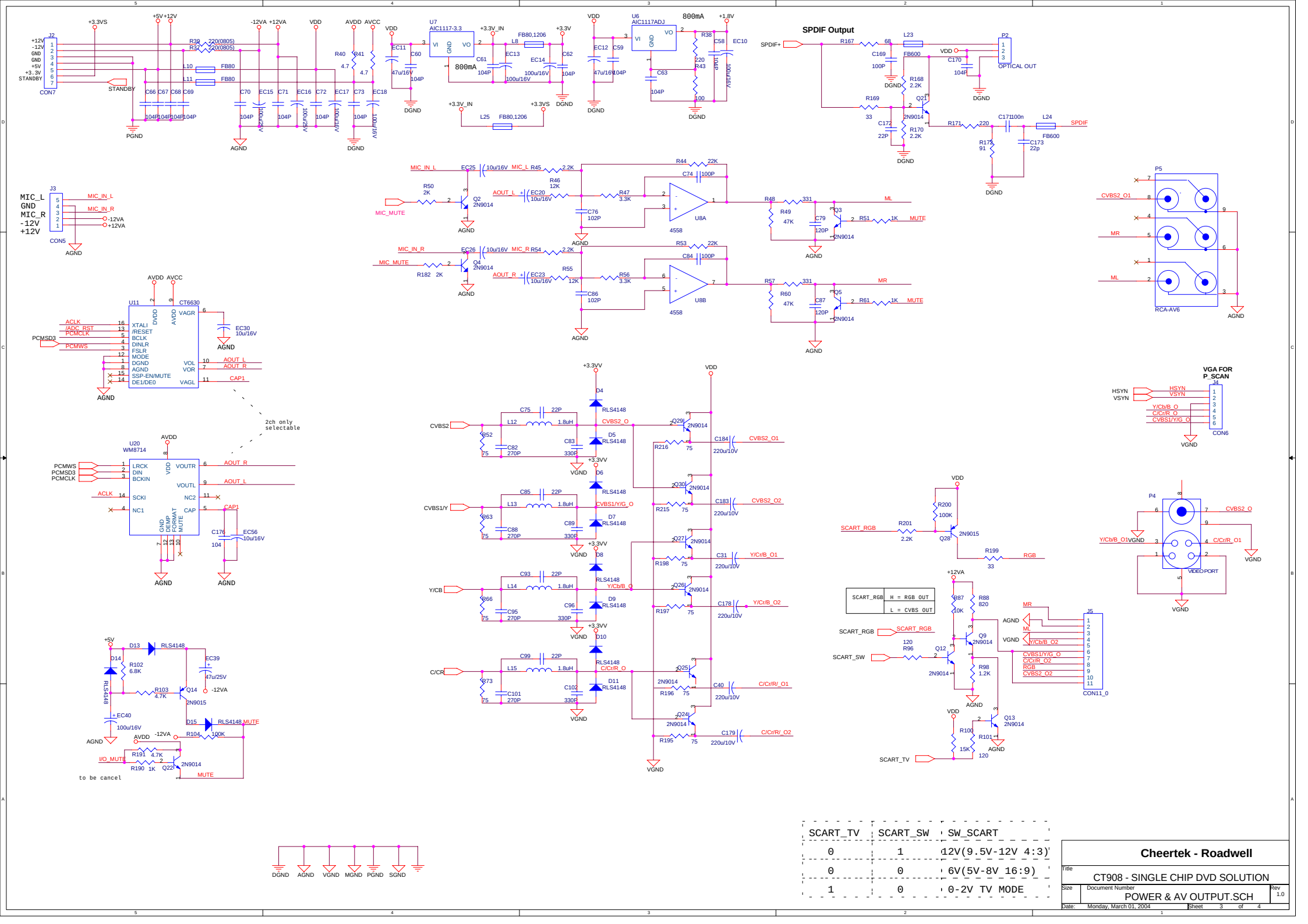


NOTE:

COPPER: 1 Layer
COPPER SIDE: 29 Layer
COMPONENT SIDE: 26 Layer
SOLDER MASK: 28 Lay-


RF
CT908
POWER&AUDIO
RFO
LDON
RF_SDEN
RF_SCK
RF_SDA
LEI
FEI
CD_DVDSW
TEI
SBAD
MIRR
SFOCUS
SSLED
SSPDON
STRACK
SMOTOR
TRAYOPEN
TRAYCLOSE
MOCTL-
OUTSW
INSW
HOMESW
STANDBY
SCART_SW
SCART_TV
SCART_RGB
CVBS1/Y
CVBS2
Y/CB
C/CR
MIC_MUTE
/ADC_RST
ADAC_CS0
ADAC_CS1
ADAC_SCK
ADAC_SDA
VSYN
HSYN
ACLK
PCMCLK
PCMWS
SPDIF+
PCMSD0
PCMSD1
PCMSD2
PCMSD3
ADC_SDA
SP3721&MOTO DRIVER
CT908&MEMORY
POWER&AUDIO DAC


CT908
W28J800B/T
T431616A
W986416DH
VFD PANEL
EACH POWER PIN -- A BYPASS CAPACITOR
C150 CLOSE TO CT908
Value Table
DV34
H0P-1250
P5
C26 392P 103P 392P
R30 15K 5.1K 15K



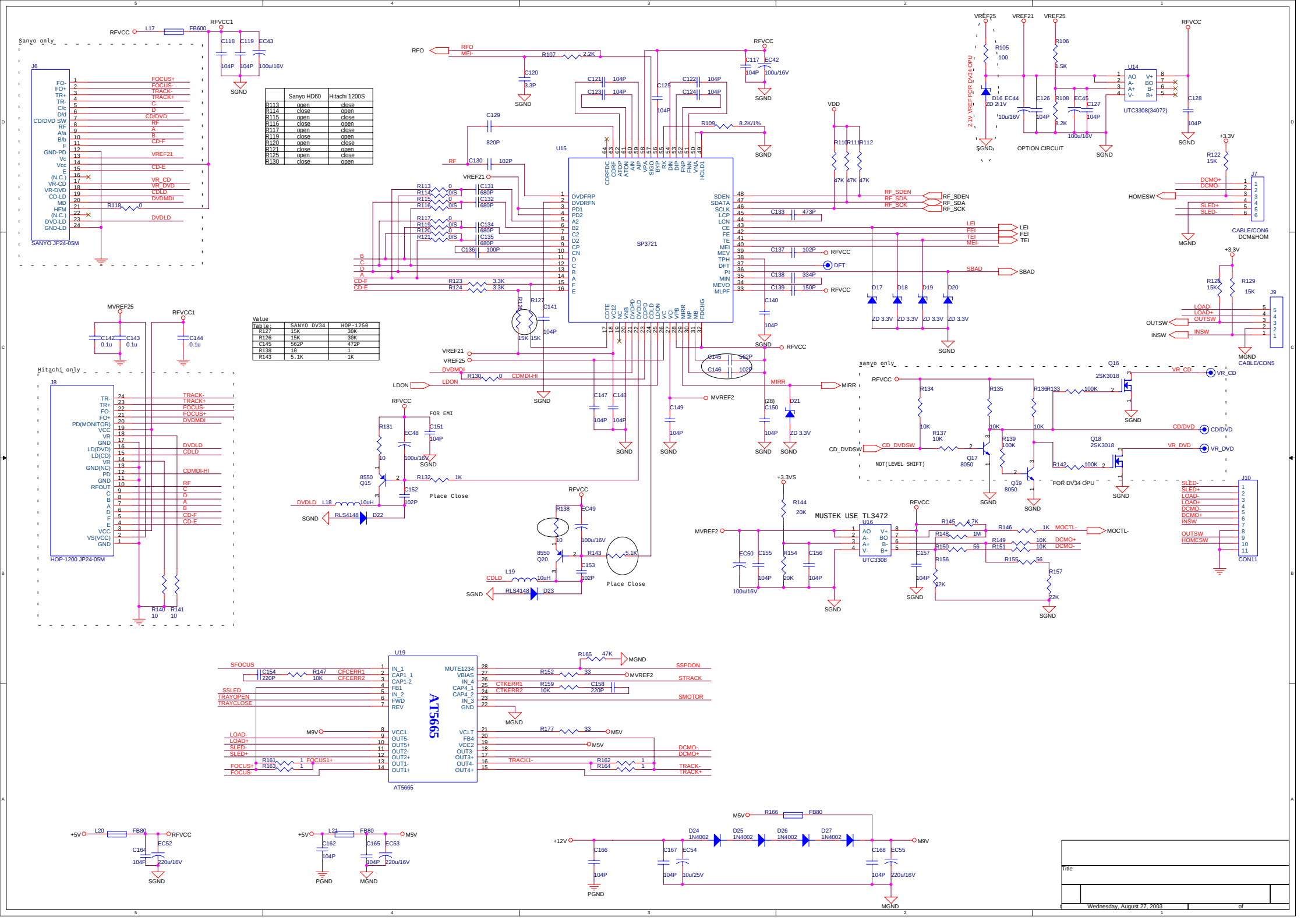
SCART_TV	SCART_SW	SW_SCART
0	1	12V(9.5V-12V 4:3)
0	0	6V(5V-8V 16:9)
1	0	0-2V TV MODE

Cheertek - Roadwell

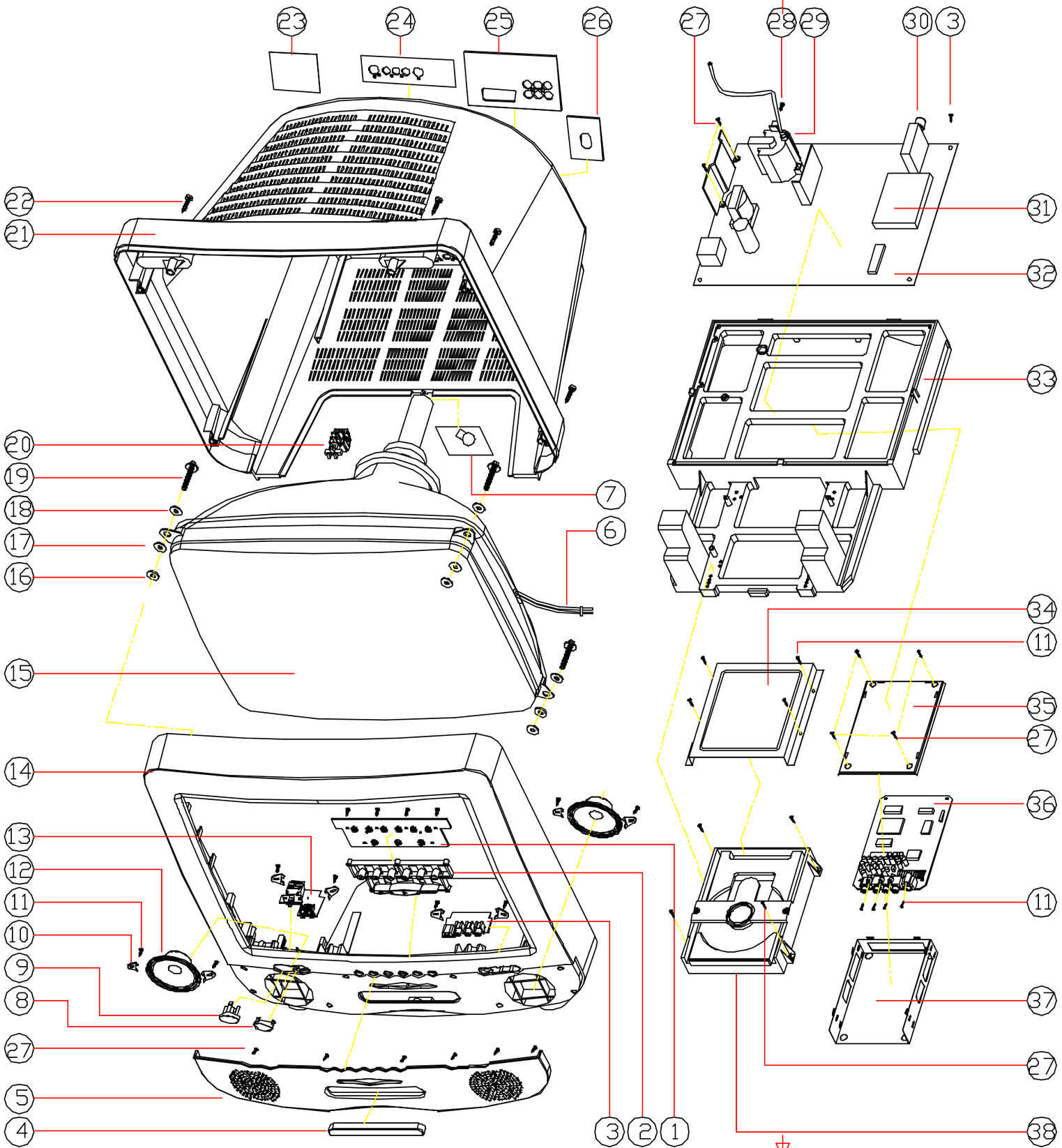
Title: CT908 - SINGLE CHIP DVD SOLUTION

Size | Document Number: POWER & AV OUTPUT.SCH | Rev: 1.0

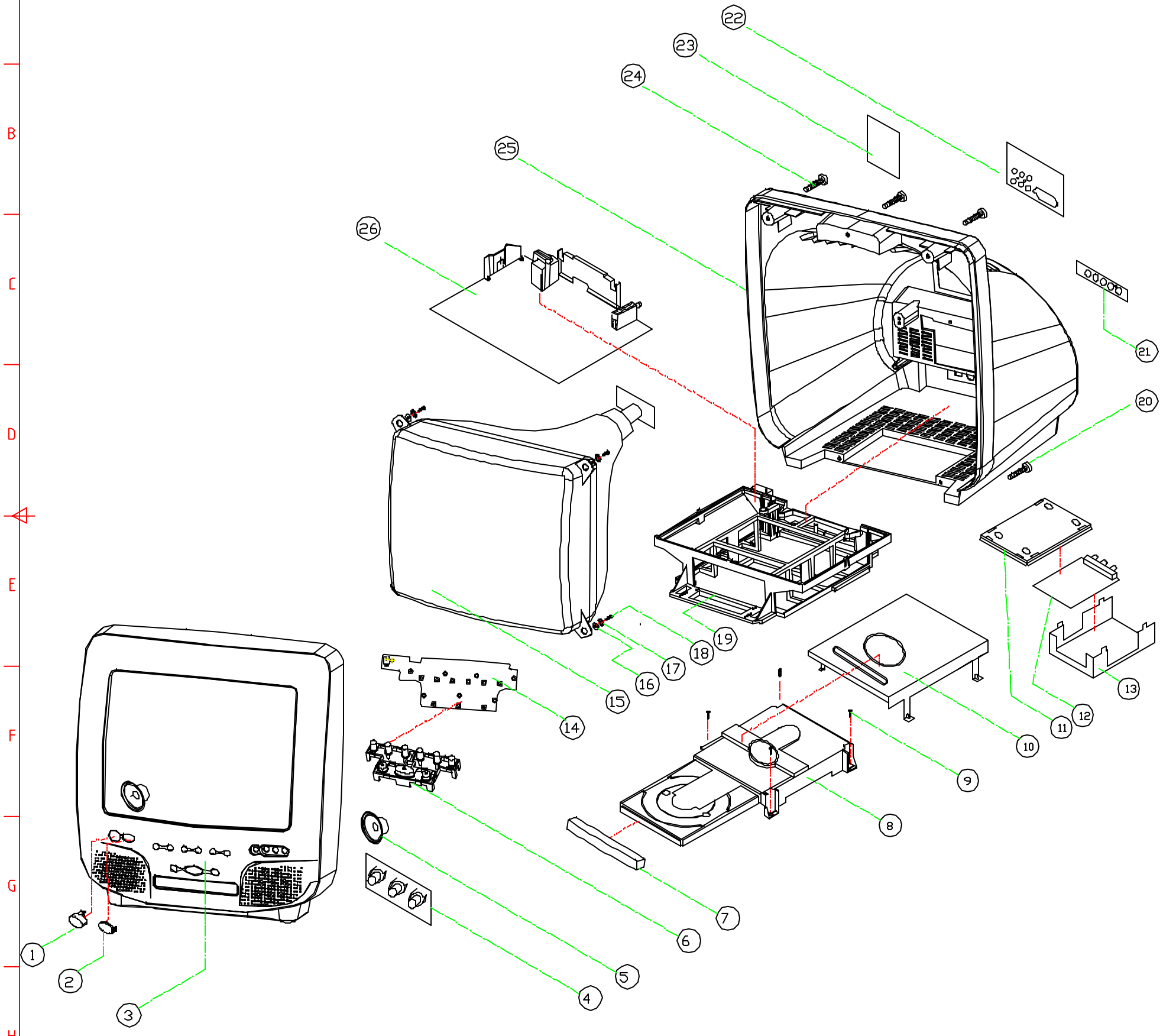
Date: Monday, March 01, 2004 | Sheet 3 of 4



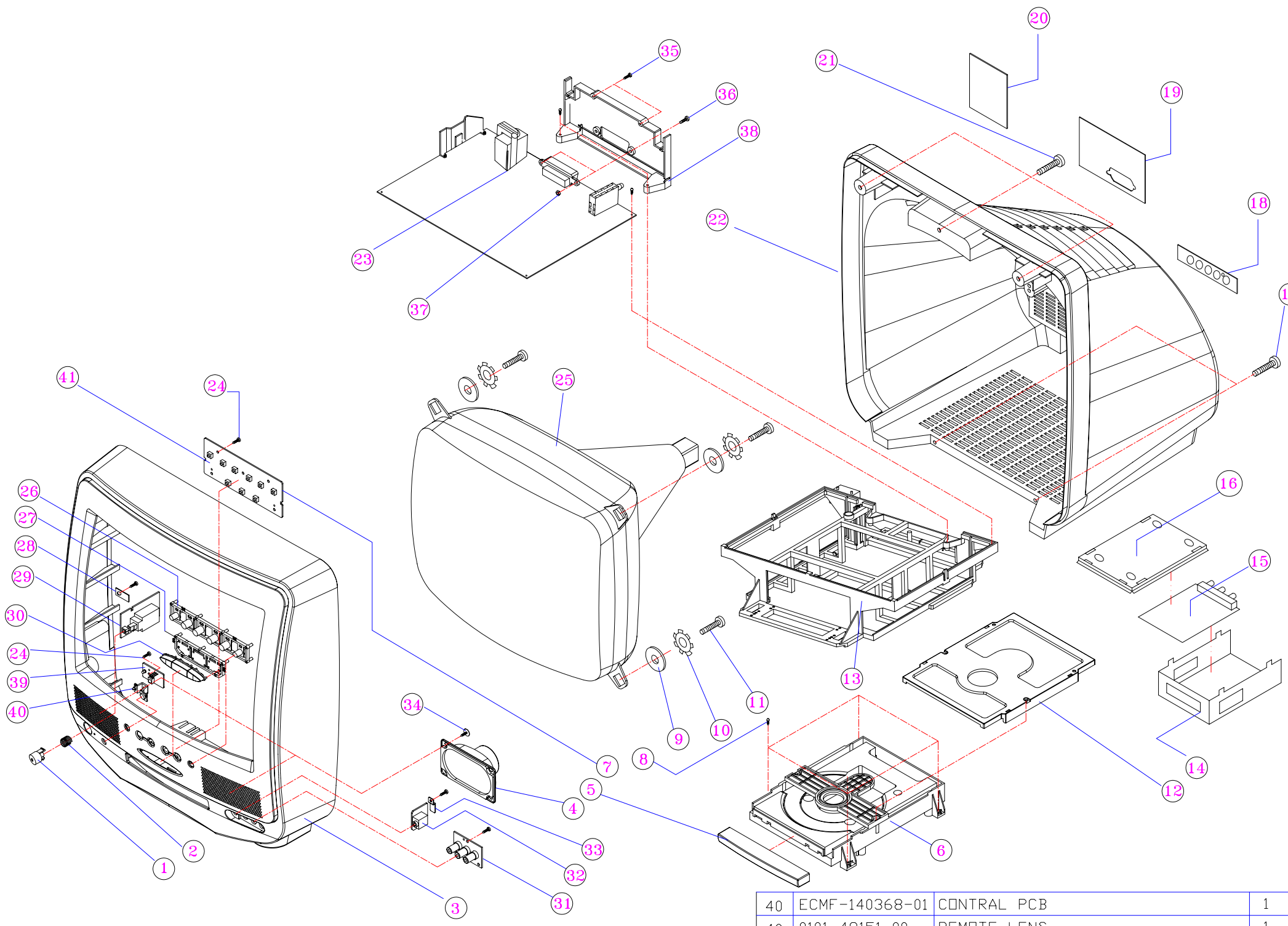
Title		
Wednesday, August 27, 2003		of



	PART NO	DESCRIPTIONS	QTY
1		FUNCTION PCB	1
2	5102-N2130A-00	FUNCTION KNOB	1
3		FRONT AV PCB	1
4	5102-D2130A-00	DVD DOOR	1
5	5102-C2130A-00	FRONT COVER	1
6		DEGAUSS WIRE	1
7		CRT PCB	1
8	5102-R2130A-00	REMOTE LENS	1
9	5102-P2130A-00	POWER KNOB	1
10	5601-NA0030-00	SPEAKER CLIP	6
11	65PB-T3001N-10	T3X10 P/B	24
12		SPEAKER	2
13		SWITCH&REMOTE SENSOR PCB	1
14	5102-F2130A-00	FRONT CABINET	1
15		21" CRT	1
16	5401-AA0003-00	RUBBER WASHER <DIA>22X<DIA>8.5X2THK	4
17	5401-AA0024-00	RUBBER WASHER <DIA>22X<DIA>8.5X3THK	4
18	6401-PE8023-F1	FIBRE WASHER O.D=23 I.D=8.0 THK=1.0MM	4
19	65PB-T6001C-35	T6.0X35 HWBHC SCREW W/COVER DIA.20	4
20	5102-M2130A-00	LINE CLAMP	1
21	5102-B2130A-00	BACK CABINET	1
22	65PB-T4001N-25	T4X25 P/B	7
23	5302-2130DA-00	AC&DC INPUT INLAY W/O HOLE	1
24		BACK PVC	1
25		DVD BACK PLATE INLAY	1
26		TUNER INLAY	1
27	65PB-T3001N-14	T3X14P/B	6
28	65PB-T4001N-12	T4X12P/B	1
29		FLYBACK	1
30		TUNER	1
31		P.I.F. SHIELDING TOP	1
32		MAIN PCB	1
33	5102-K2130A-00	MAIN PCB BRACKET	1
34		DVD SANYO LOADER SHIELDING TOP	1
35		DVD MTK MPEG SHIELDING-TOP	1
36		MTK MPEG PCB	1
37		DVD MTK MPEG SHIELDING-BOTTOM	1
38		SANYO LOADER BKT	1

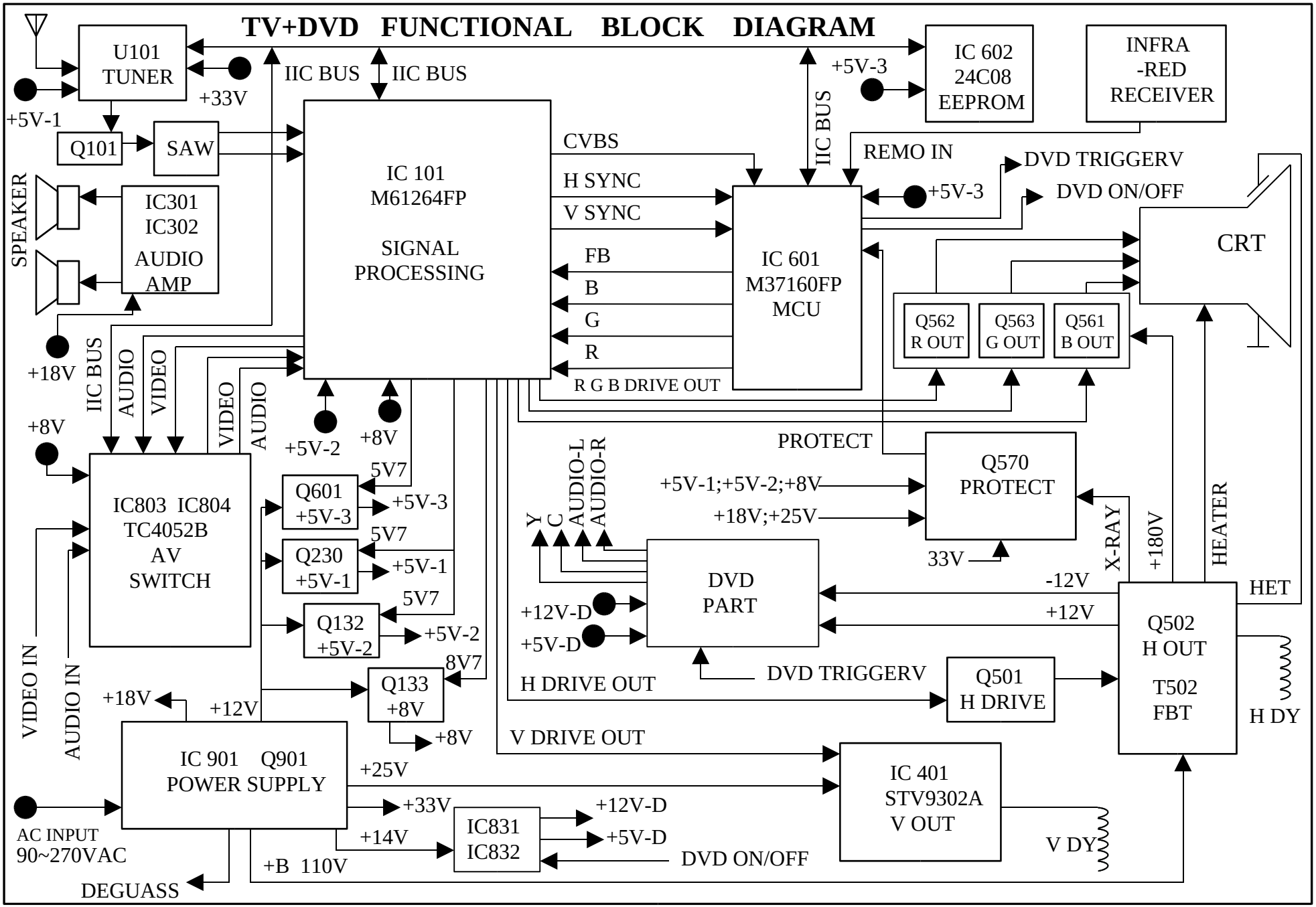


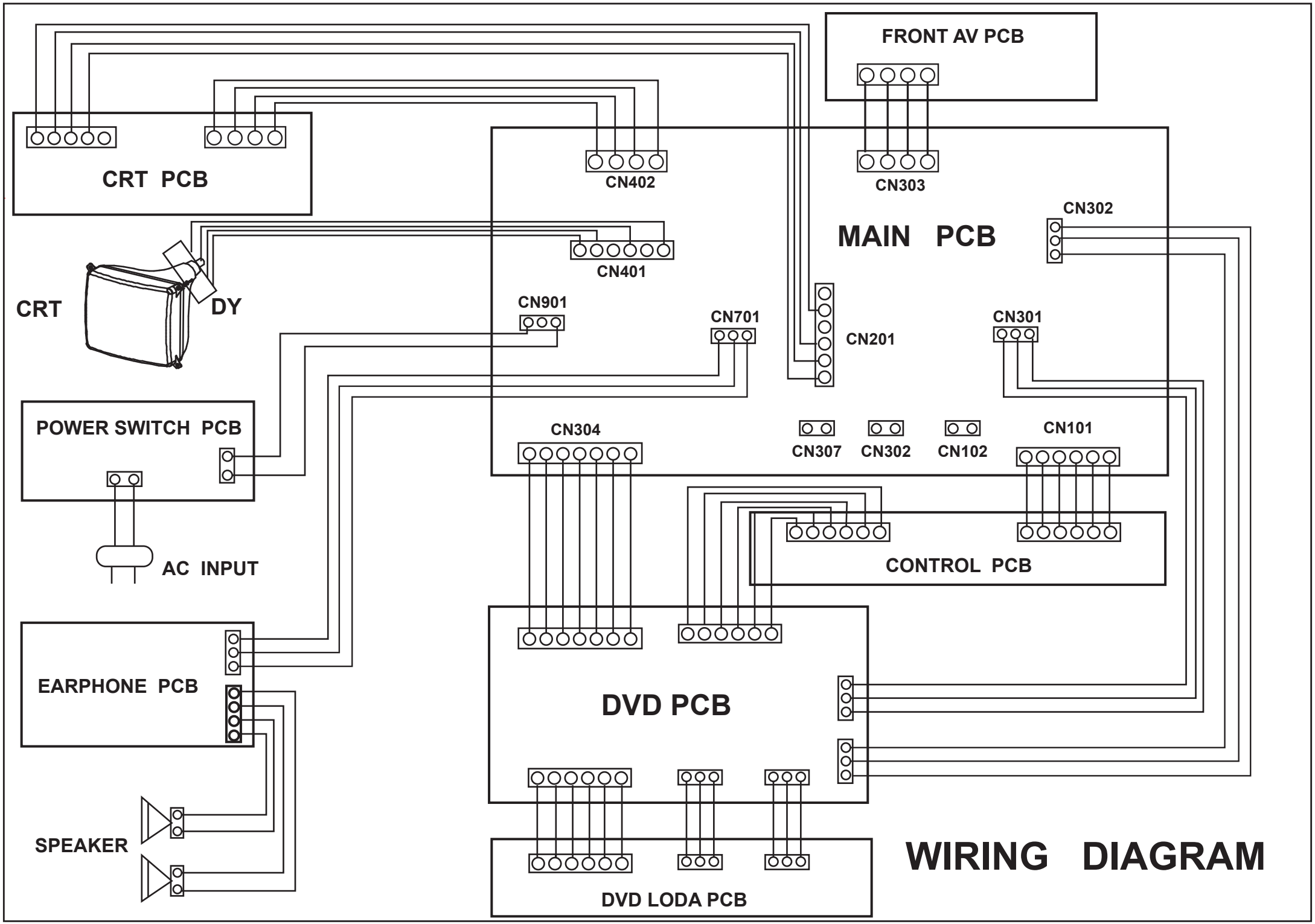
26		TV MAIN PCB	1
25	5102-ED0363-00	BACK CABINET	1
24	65PB-T5000C-25	SELF-TAPPING SCREW T5X25P/B	3
23		AC&DC SOCKET POWER INLAY W/O HOLES	1
22		JACK PLATE INLAY	1
21		DVD BACK PLATE INLAY	1
20	65PB-T4001N-20	SELF-TAPPING SCREW T4X20P/B	2
19	5102-EA0403-00	CHASSIS BRACKET	1
18	65PB-T5000C-30	SELF-TAPPING SCREW 5X30P/B	4
17	6701-AA0008-00	METAL WASHER 6.5-7.0mm	4
16	5401-AA0024-00	RUBBER WASHER 22X6.5X3	4
15		14"CRT	1
14		FUNCTION PCB	1
13		DVD MTK MPEG SHIELDING-BOTTOM	1
12		DVD MPEG PCB	1
11		DVD MTK MPEG SHIELDING-TOP	1
10	6701-CA0128-00	DVD SANYO LOADER SHIELDING TOP	1
9	65PB-T3001N-12	SELF-TAPPING SCREW T3X12P/B	4
8		SANYO LOADER BRACKET	1
7	5102-CA0399-00	DVD DOOR	1
6	5102-CA0400-00	FUNCTION KNOB	1
5		SPEAKER	2
4		FRONT AV PCB	1
3	5102-EC0398-00	FRONT CABINET	1
2	5102-BA0402-00	FRONT LENS	1
1	5102-BA0401-00	POWER KNOBS	1
	PART NO	DESCRIPTIONS	QTY

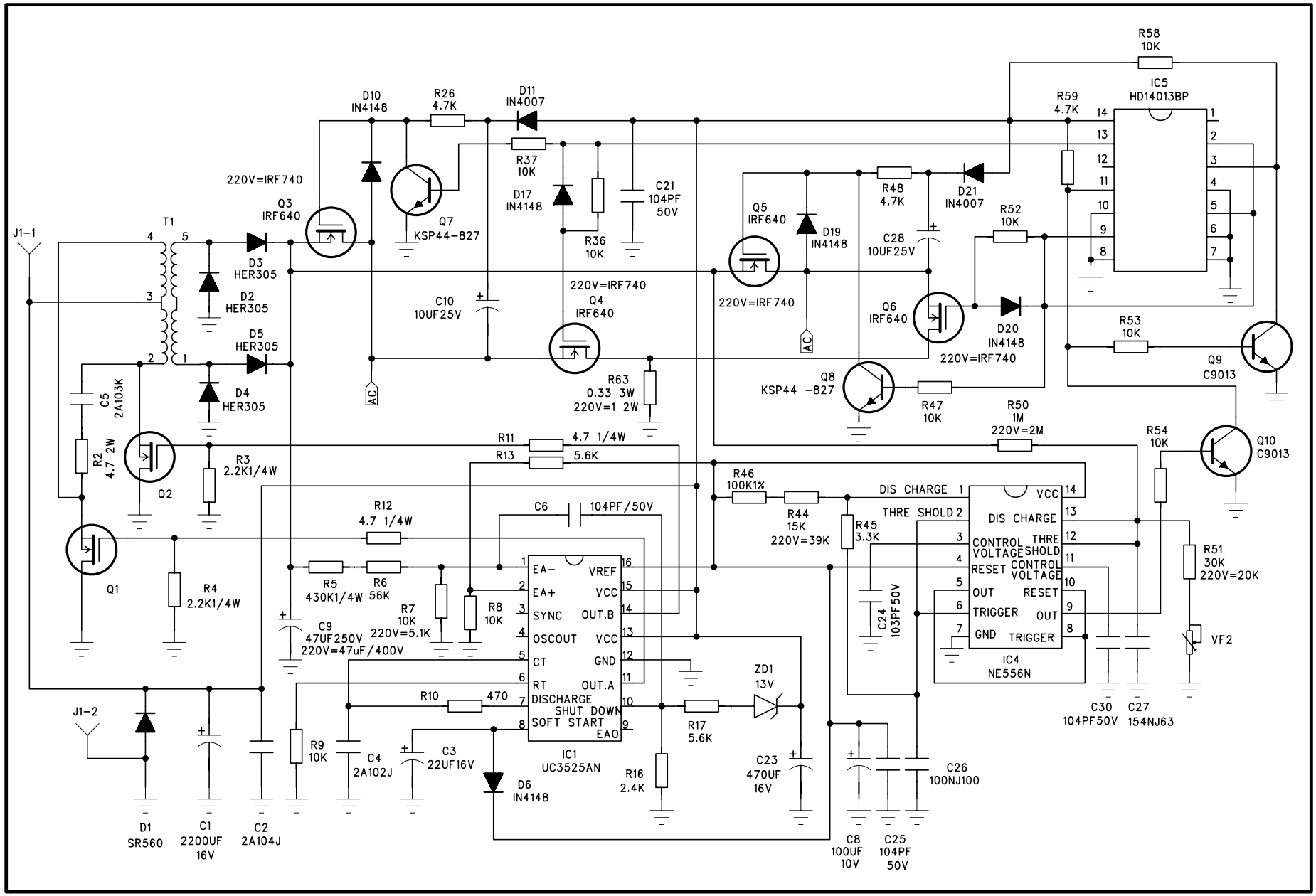


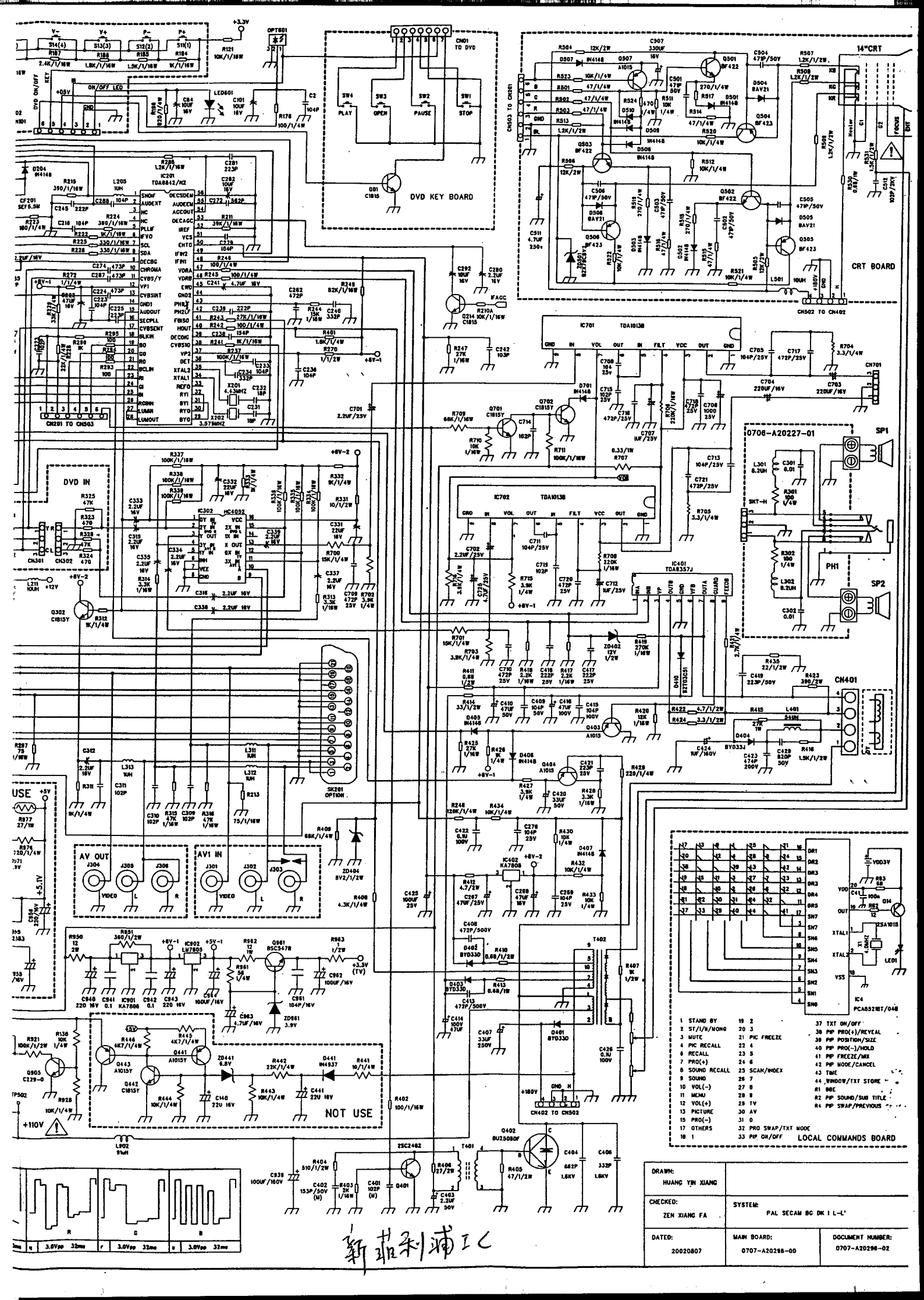
30	0101-47793-00	DVD KNOB LENS	1
29		POWER SWITCH PCB	8
28	0102-41635-00	SPEAKER CLIP	2
27	0101-47800-00	DVD KNOB BRACKET	1
26	0101-47791-00	FUNCTION KNOB	1
25		14"CRT	1
24	65PB-T3001N-08	SELF-TAPPING SCREW T3X8P/B	11
23		TV MAIN PCB	1
22	5102-ED0363-00	BACK CABINET	1
21	65PB-T5000C-25	SELF-TAPPING SCREW T5X25P/B	3
20	5302-AA0332-00	AC&DC SOCKET POWER INLAY W/O HOLES	1
19		JACK PLATE INLAY	1
18		DVD BACK PLATE INLAY	1
17	65PB-T4001N-20	SELF-TAPPING SCREW T4X20P/B	2
16	6701-CA0126-00	DVD MTK MPEG SHIELDING-TOP	1
15		DVD MPEG PCB	1
14	6701-CA0130-00	DVD MTK MPEG SHIELDING-BOTTOM	1
13	5102-1420LC-00	CHASSIS BRACKET	1
12	5102-1420LC-00	DVD SANYO LOADER COVER	1
11	65PB-T5000C-30	SELF-TAPPING SCREW 5X30P/B	4
10	6701-AA0008-00	METAL WASHER 6.5-7.0mm	4
9	5401-AA0024-00	RUBBER WASHER 22X6.5X3	4
8	65PB-T3001N-12	SELF-TAPPING SCREW T3X12P/B	4
7	0707-A20302-00	CONTRAL PCB	1
6		SANYO LOADER	1
5	5102-CA0366-01	DVD DOOR	1
4		SPEAKER	2
3	5102-EC0362-00	FRONT CABINET	1
2	0102-44268-00	KNOB SPRING	1
1	0101-48151-00	POWER KNOB	1

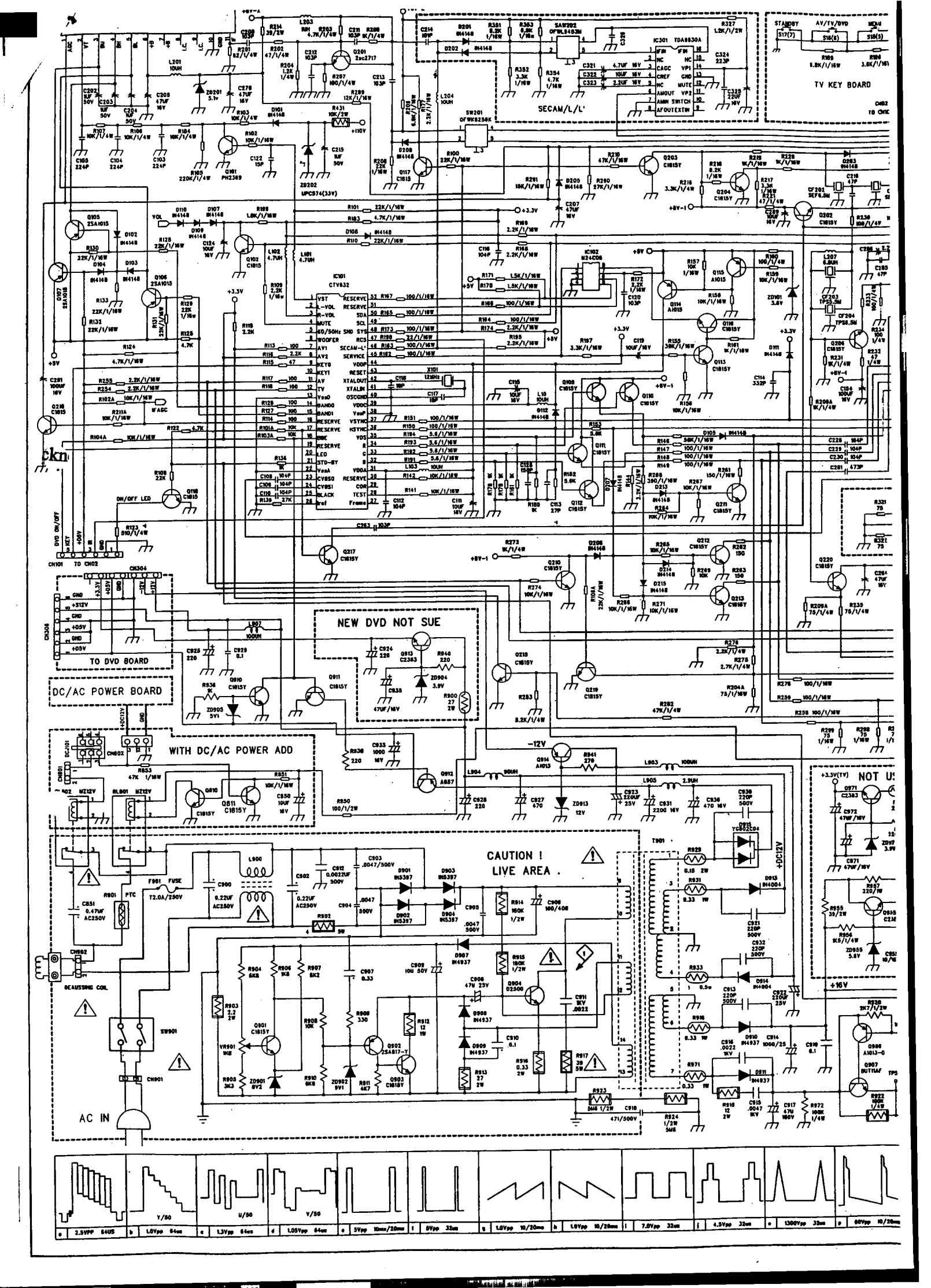
	PART NO	DESCRIPTIONS	QTY
40	ECMF-140368-01	CONTRAL PCB	1
40	0101-48151-00	REMOTE LENS	1
39	ECIV-140366-01	LED PCB	1
38	5102-CA0239-00	JACK PLATE	1
37	66MH-M3050N-03	MACHINE SCREW M3 NUT	2
36	65PB-M3050N-10	MACHINE SCREW M3X10P/B	2
35	65PB-T3001N-14	SELF-TAPPING SCREW T3X14P/B	2
34	0105-18933-00	SCREW T3X14P/B(ROUND WASHER)	8
33	6701-AA0045-00	EAR PHONE PCB BRACKET	1
32	EE00-140367-01	HEADPHONE PCB	1
31	EA00-000365-01	FRONT AV PCB	1


TV+DVD FUNCTIONAL BLOCK DIAGRAM
U101 TUNER
+33V
IIC BUS
IIC BUS
IC 602 24C08 EEPROM
+5V-3
IIC BUS
INFRA -RED RECEIVER
+5V-1
Q101
SAW
IC 101 M61264FP SIGNAL PROCESSING
CVBS
H SYNC
V SYNC
FB
B
G
R
R G B DRIVE OUT
IC 601 M37160FP MCU
REMO IN
+5V-3
DVD TRIGGERV
DVD ON/OFF
SPEAKER
IC301 IC302 AUDIO AMP
CRT
Q562 R OUT
Q563 G OUT
Q561 B OUT
+18V
IIC BUS
AUDIO
VIDEO
VIDEO
AUDIO
+5V-2
+8V
+8V
PROTECT
Q570 PROTECT
+5V-1;+5V-2;+8V
+18V;+25V
33V
X-RAY
+180V
HEATER
IC803 IC804 TC4052B AV SWITCH
Q601 +5V-3
5V7
+5V-3
Q230 +5V-1
5V7
+5V-1
Q132 +5V-2
5V7
+5V-2
Y
C
AUDIO-L
AUDIO-R
DVD PART
+12V-D
+5V-D
-12V
+12V
Q502 H OUT
T502 FBT
HET
H DY
VIDEO IN
AUDIO IN
Q133 +8V
8V7
+8V
+18V
+12V
H DRIVE OUT
DVD TRIGGERV
Q501 H DRIVE
V DRIVE OUT
IC 901 Q901 POWER SUPPLY
+25V
+33V
+14V
IC831 IC832
+12V-D
+5V-D
DVD ON/OFF
IC 401 STV9302A V OUT
V DY
AC INPUT 90~270VAC
+B 110V
DEGUASS


FRONT AV PCB
CRT PCB
CN402
CN303
CN302
MAIN PCB
CN401
CRT
DY
CN901
CN701
CN201
CN301
POWER SWITCH PCB
CN304
CN307
CN302
CN102
CN101
AC INPUT
CONTROL PCB
EARPHONE PCB
DVD PCB
SPEAKER
DVD LODA PCB
WIRING DIAGRAM


J1-1
J1-2
T1
D1 SR560
C1 2200UF 16V
C2 2A104J
D2 HER305
D3 HER305
D4 HER305
D5 HER305
C5 2A103K
R2 4.7 2W
Q1
Q2
R3 2.2K1/4W
R4 2.2K1/4W
D10 IN4148
R26 4.7K
D11 IN4007
R37 10K
D17 IN4148
R36 10K
C21 104PF 50V
220V=IRF740
Q3 IRF640
Q7 KSP44-827
C10 10UF25V
220V=IRF740
Q4 IRF640
R63 0.33 3W 220V=1 2W
AC
R11 4.7 1/4W
R13 5.6K
R12 4.7 1/4W
C6 104PF/50V
R5 430K1/4W
R6 56K
C9 47UF250V 220V=47uF/400V
R7 10K 220V=5.1K
R8 10K
R10 470
R9 10K
C4 2A102J
C3 22UF16V
D6 IN4148
IC1 UC3525AN
EA- VREF
EA+ VCC
SYNC OUT.B
OSCOUT VCC
CT GND
RT OUT.A
DISCHARGE
SOFT START EAO
SHUT DOWN
R16 2.4K
R17 5.6K
ZD1 13V
C23 470UF 16V
C8 100UF 10V
C25 104PF 50V
C26 100NJ100
Q5 IRF640
D19 IN4148
220V=IRF740
R48 4.7K
D21 IN4007
C28 10UF25V
Q6 IRF640
D20 IN4148
220V=IRF740
Q8 KSP44 -827
R47 10K
R50 1M 220V=2M
R52 10K
R53 10K
Q9 C9013
R58 10K
IC5 HD14013BP
R59 4.7K
R54 10K
Q10 C9013
R46 100K1%
R44 15K 220V=39K
R45 3.3K
C24 103PF50V
DIS CHARGE
THRE SHOLD
CONTROL VOLTAGE
RESET
OUT
TRIGGER
GND
VCC
THRE SHOLD
RESET CONTROL VOLTAGE
IC4 NE556N
R51 30K 220V=20K
VF2
C30 104PF50V
C27 154NJ63

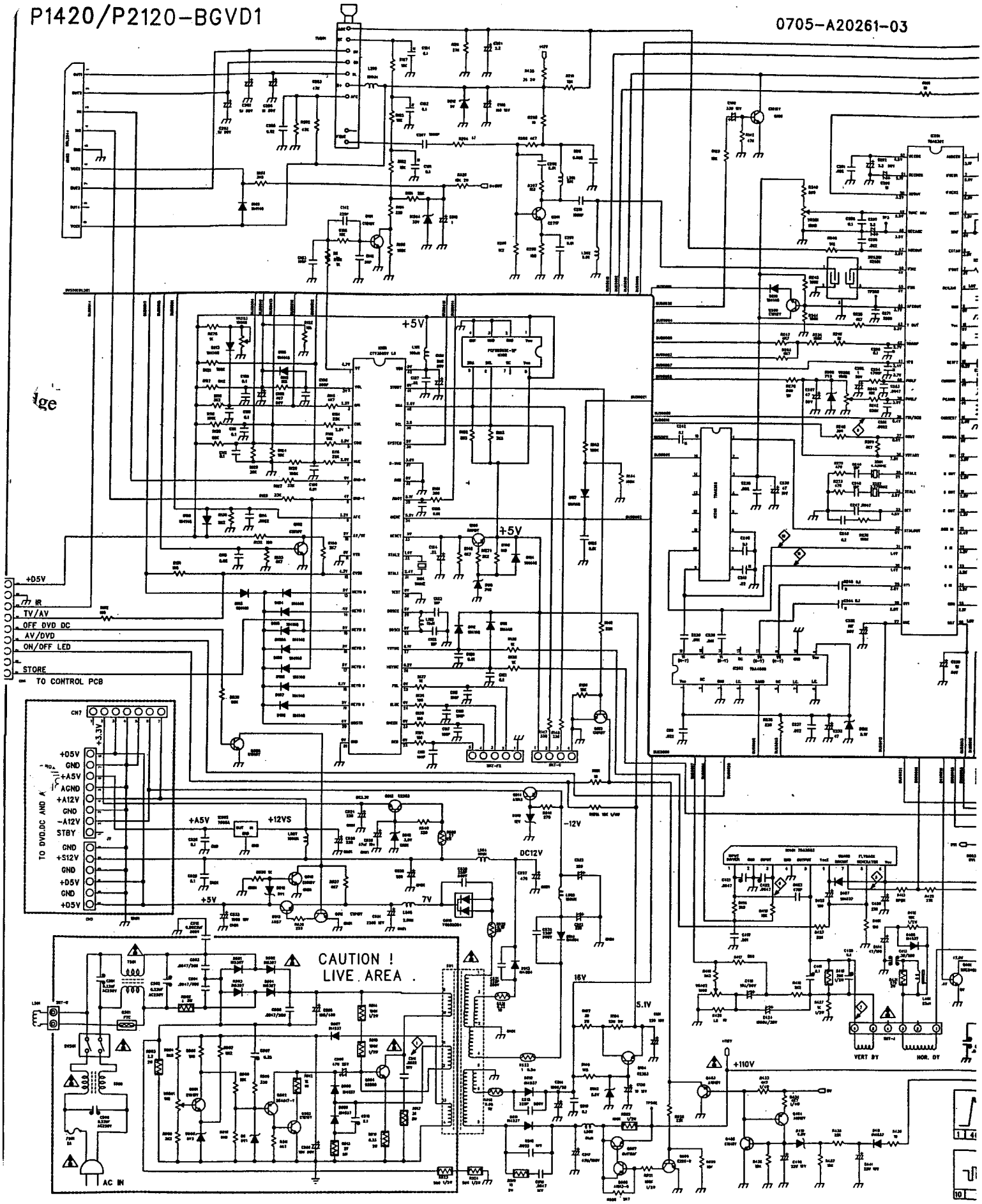

DVD KEY BOARD
CRT BOARD
14"CRT
DVD IN
AV OUT
AV1 IN
NOT USE
LOCAL COMMANDS BOARD
0706-A20227-01
SP1
SP2
PH1
CN401
IC701 TDA10138
IC702 TDA10138
IC401 TDA8357J
IC402 KA7808
IC201 TDA8842/N2
IC302 HC4052
IC4 PCA8521BT/048
1 STAND BY
2 ST/I/II/MONO
3 MUTE
4 PIC RECALL
5 RECALL
6 PRO(+)
7 SOUND RECALL
8 SOUND
9 VOL(-)
10 MENU
11 VOL(+)
12 PICTURE
13 PRO(-)
15 OTHERS
16 1
19 2
20 3
21 PIC FREEZE
22 4
23 5
24 6
25 SCAN/INDEX
26 7
27 8
28 9
29 TV
30 AV
31 0
32 PRO SWAP/TXT MODE
33 PIP ON/OFF
37 TXT ON/OFF
38 PIP PRO(+)/REVEAL
39 PIP POSITION/SIZE
40 PIP PRO(-)/HOLD
41 PIP FREEZE/MIX
42 PIP MODE/CANCEL
43 TIME
44 WINDOW/TXT STORE
R1 90E
R2 PIP SOUND/SUB TITLE
R4 PIP SWAP/PREVIOUS
DRAWN: HUANG YIN XIANG
CHECKED: ZEN XIANG FA
DATED: 20020807
SYSTEM: PAL SECAM BG DK I L-L'
MAIN BOARD: 0707-A20298-00
DOCUMENT NUMBER: 0707-A20298-02

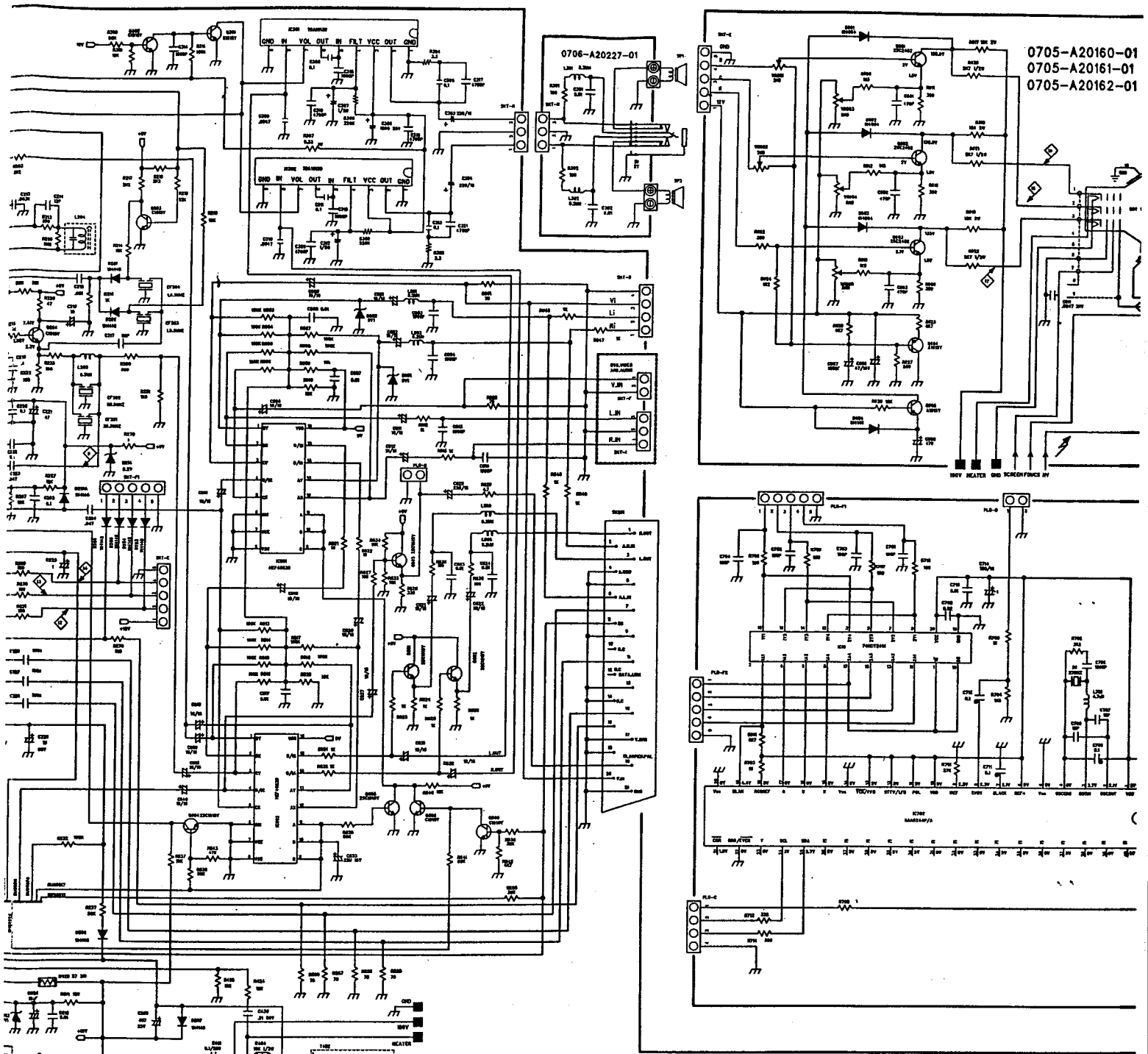

TV KEY BOARD
SECAM/L/L'
NEW DVD NOT SUE
TO DVD BOARD
DC/AC POWER BOARD
WITH DC/AC POWER ADD
CAUTION !
LIVE AREA .
AC IN
DEAUSSING COIL
TO CN02
NOT U

旧菲利浦IC

P1420/P2120-BGVD1

0705-A20261-03





CIRCUIT SYMBOLS		
CAPACITORS		RESISTORS
CERAMIC CAP.	MYLAR FILM	CARBON FILM
N.P.O. CAP.	METAL POLYESTER	CEMENT
TANTALUM CAP.	POLYESTER FILM	FUSEABLE
NON-POLAY CAP.	POLYPROP YLENE	METER OXIDE
ELECTROLY CAP.		

NOTE!
1. ALL CAPACITORS ARE IN uF UNLESS OTHERWISE NOTED.
   ALL CAPACITORS ARE 50V UNLESS OTHERWISE NOTED.
2. ALL RESISTORS ARE IN OHM 1/4W UNLESS OTHERWISE NOTED.
3. ALL DIODES ARE IN IN4148 UNLESS OTHERWISE NOTED.
4. ALL TRANSTORS (NPN) ARE 2SC1815 UNLESS OTHERWISE NOTED.
   ALL TRANSTORS (PNP) ARE 2SC1015 UNLESS OTHERWISE NOTED.
5. DC VOLTAGE ARE MEASURED FROM POINTS INDICATED TO THE CIRCUIT GROUND WITH A DIGITAL MULTIMETER TEST.
6. WAVEFORMS ARE TAKEN WITH SETTING CONTROLS TO A NORMAL CONDITIONS (COLOR PHILIPS PATTERN).
7. THIS CIRCUIT DIAGRAM IS SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.
8. ⚠ SAFETY CRITICAL DEVICE.

TITLE : TV SCHEMATIC DIAGRAM.	
SYSTEM: PAL NTSC BG ONE PAGE TEXT	
MODE: P1420/P2120-BGVD1	
DWG. NO. :	DWG. DATE : 2001- 9 - 15
DWG. BY :	APP. BY :